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ADDRESS  
TO THE  
ROYAL GEOGRAPHICAL SOCIETY  
OF LONDON;

*Delivered at the Anniversary Meeting on the 26th May, 1845.*

BY

RODERICK IMPEY MURCHISON, V.P.R.S. & G.S.,

CORR. ROYAL INST. FRANCE, &c.,

PRESIDENT.

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GENTLEMEN,—During the year which has elapsed since I addressed you from this chair, our Society has not only produced fruits of equal value to those of former years, but has exhibited proofs of having obtained still stronger hold on public opinion, by a very marked accession of new members, among whom are many persons of high consideration. Notwithstanding, however, this numerical prosperity, we have not, I lament to say, been yet able to obtain from Her Majesty's Government the sole small boon we sought for at their hands, of the grant of apartments; and though, in comparison to recent years, our finances are in a flourishing condition, inasmuch as, during my Presidency, we have not been obliged to encroach upon the remaining portion of our capital, we are compelled to absorb annually the composition fees of new members, as well as our annual income, in order to enable us to meet our current expenses, and at the same time to communicate to the public that geographical knowledge, which in most other countries of Europe is accumulated and diffused at the public expense. At our last anniversary I announced, that the one thing alone wanting to render our career permanent and useful was the grant of an apartment, which would save us from a heavy annual outlay, and would place us in a condition really to advance geography, by occasionally helping the wants of meritorious explorers of distant lands; and though this, my fervent hope, has not been realized, I trust that a Society, of which Her Majesty is the patron, and which is constantly employed in works of acknow-

ledged national utility, will not have much longer to make this appeal to Her Majesty's Government.

#### OBITUARY.

In accordance with custom, I have, before entering upon the scientific topics of my address, to perform the duty of paying our tribute of regret to our departed friends and members who have made themselves useful in their generation, either by the services they have rendered geography or other branches of science.

At the head of this list I place the name of Mr. Francis Baily, who from the foundation of our Society was one of its trustees, and at the time of his death was President of the Royal Astronomical Society, a Member of the Royal Irish Academy, a Corresponding Member of the Institute of France and of the Royal Academy of Berlin, and of many other scientific bodies.

The task of recording the eminent qualities, the arduous labours, and useful life of Mr. Baily in his capacity of President of the Royal Astronomical Society, of which he was the main-spring, has devolved upon Sir John Herschel, who has performed it in a manner equalled only by the deep interest of the subject. I shall not, therefore, attempt any eulogium of our deceased and much-esteemed trustee further than to say that, whether as an active member of the Council of the Society, or as a steady friend of the British Association for the Advancement of Science, of which he was a co-trustee with myself, I have had abundant opportunities of witnessing the value of his labours, and that I most sincerely deplore his death.

Among other valuable members of our Society who have been taken from us, I will first mention that very scientific seaman and gallant naval officer Captain Basil Hall, who, by numerous descriptions of distant lands, brought their features and inhabitants so vividly before the public eye; and who, by the zeal, acumen, and perseverance with which he worked out every question he considered, proved himself to be a son worthy of his father, Sir James Hall, the celebrated Scottish philosopher. In characterising the admirable style of my deceased friend, which has justly acquired for him a place among the British Classics, I have heard with delight one of the most eminent scholars of the age\* thus speak of it:—"Basil Hall's style appears to me to be the very model of correct and perspicuous writing, combining elegance and ease with a terse and precise mode of expression. His skill in describing external objects, and especially any artificial or mechanical process, is unrivalled.

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\* Dr. Coplestone, the present Bishop of Llandaff.

He knows how to finish his picture, and knows where to leave off. The reader sees, as it were, whatever he describes; and such is the felicity of his language, that it impresses the matter indelibly on the memory, as having afforded not only pleasure, but instruction."

We have, further, lost the Dean of Carlisle and Mr. Guillemard, who, though not positive contributors to science, were, throughout their long lives, its steady friends and supporters, and were beloved by all who knew them.

I have next to record the decease of Sir Gore Ouseley, whose diplomatic services to his country will occupy a fitting place in the page of history, and whose loss will be deplored by every contemporary who enjoyed his acquaintance. Deeply versed in Oriental literature acquired during a residence in Hindostan, he was one of the few public men who had thereby the power greatly to influence the conduct of eastern monarchs, to whom he was accredited. Of this power I will now merely state that, when the last great European struggle was at its height, and Napoleon was on his march to Moscow, Sir Gore Ouseley, His Britannic Majesty's Ambassador at the Court of Teherán, brought about with the mediation of England an important treaty between Russia and Persia, whereby a large Russian army on the frontier of the latter country was at once liberated, and, advancing upon the south-western flank of the French armies in Russia, mainly contributed to produce their rapid retreat, and the rout of the Beresina. For this important service in the cause of the Allies, our ambassador received from the Emperor of Russia the high honour of the Cross of St. Alexander Nevsky of the first class. As a cultivator of art, science, and literature, and in the whole tenor of his life, Sir Gore Ouseley united in his own person the most liberal views with the most courteous and agreeable manners.

Lastly, I have to lament the death of Dr. Edward Goodenough, the late Dean of Wells, for many years head master of Westminster, and son of the scientific Bishop of the same name. Dr. Goodenough was one of the earliest members of our Society; and we have in our Transactions a prominent proof of the interest he took in cultivating that department of the science of geography, which consists in the comparison of ancient names, places, coasts, and seas with those of the present time. His learned paper on the voyage of His Majesty's ship *Blonde* in the Black Sea, whilst it contributed to illustrate the observations of Polybius on that part of the world, and the *Periplus* of the Euxine, as recorded by Arrian, was one of the most interesting communications given to the public during the infancy of this Society.\* As a personal friend

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\* See Journal of Royal Geographical Society, vol. i.



of Dr. Goodenough, I can testify, with many who surround me, that he was as good and amiable in private life as he was eminent for his learning.

Of Foreign Corresponding Members, M. Duponceau, of Philadelphia, and M. Ferdinand de Navarette have passed away. The former, who was of French origin, was President of the Philosophical Society of Philadelphia, and is well known to the students of Philology by his numerous writings on the American languages. M. de Navarette was Director of the Hydrographic Dépôt at Madrid. He was author of a Collection of the Voyages and Discoveries of the Spaniards, and we learn with regret that he has left some important works unfinished. Don Sebastian Miñano, author of the '*Diccionario Geografico de España*,' died also lately at Bayonne.

Colonel Denaix, a most indefatigable labourer in Topography and Physical Geography, was the head Administrator at the Dépôt Général de la Guerre of Paris, and one of the Founders of the Geographical Society of France. He was at great pains to systematise Orography; though he does not appear to have been fortunate in simplifying that very difficult subject, of the classification of the various elevations on the earth's surface. He was one of those who fully appreciated the connexion between Geology and Geography; and he brought his knowledge to bear in explaining a great variety of physical phenomena.

#### ENGLAND.

ENGLISH SURVEYS.—*Expedition to discover a North-West Passage.*—The subject of a North-West Passage, from the Atlantic to the Pacific, through the Polar Sea, has at various periods for the last three centuries occupied the attention of the British Government. Several recent expeditions have been sent forth for this purpose, and various geographical and physical observations and discoveries have been made, by which the question of a passage is now almost narrowed to one definite line of route. With a confident hope of accomplishing this object, our first President, Sir John Barrow, recently submitted a plan to the First Lord of the Admiralty, with a request that it might be laid before the President and Council of the Royal Society, by whom a resolution was passed in favour of the measure. It was then further referred to those best acquainted with the subject,—Sir John Franklin, Sir Edward Parry, Sir James Ross, and Lieutenant-Colonel Sabine,—all of whom approved of the plan.

With these separate opinions, the project was sent to the head of Her

Majesty's Government, and being by him approved, measures were forthwith taken to carry it into execution. Two ships, the 'Erebus' and 'Terror,' the same which had been so successfully employed for three years in the Southern Arctic regions under Sir James Ross, were immediately placed under the command of Sir J. Franklin, and have just sailed for the service in question. To obviate delay from calms or contrary winds, or where narrow channels between floes or masses of ice may have to be passed, each ship is supplied with a small steam-engine to work a screw, so as to ensure a progress of four or five knots an hour; and this is so contrived, that it can be let down or drawn up as occasion may require. Each ship is commanded by a captain, thoroughly experienced in seas encumbered with ice; Captain Sir John Franklin in the 'Erebus,' and Captain Crozier in the 'Terror,' with able and intelligent officers under them, several of whom have been instructed in the best method of taking magnetic observations by that zealous promoter of magnetical science, Lieutenant-Colonel Sabine.

The first attempt at the discovery of a N. W. passage in modern times was made by Captain John Ross, and proved unsuccessful; but we all know that, in the following year, Sir Edward Parry entered Lancaster Sound, passed through it and Barrow's Strait, to which it directly leads, and proceeded as far W. as Melville Island: this he found surrounded by ice, as the easterly shores of the Arctic regions generally are now well known to be; and having remained a winter there, he returned by the same route, and without interruption. Since then the Lancaster Strait has frequently been traversed and found free from ice, and has almost yearly been entered by ships employed in the whale fishery. The route by Lancaster Sound and Barrow's Strait leads nearly in a direct line about W.S.W. to Behring's Strait, and is therefore apparently the proper, and, as far as our knowledge hitherto extends, the only maritime route to be pursued on the passage to that Strait. There is, indeed, an opening, which issues from the northern side of Barrow's Strait, called, by Parry, Wellington Inlet, and which in appearance is little inferior to Lancaster Sound; but its direction points towards the Pole, and the only chance of its becoming available for the N.W. Passage would be that it leads into an open sea, and that the cluster of islands in that direction will be found to cease. The track, however, expected to be pursued on this occasion is, through the now well-known Lancaster Sound and Barrow's Strait as far as Cape Walker on the southern side of the latter, between which and Melville Island the expedition is to take a middle course by the first opening that presents itself after passing the Cape, and steering to the southward, and halfway between Banks' Land (if such exist) and the northern coast of America,

steer directly, or as far as the ice will admit, for the centre of Behring's Strait. The distance to this from the centre point between Cape Walker and Melville Island is about 900 miles. The examination of the northern coast of America by Sir John Franklin, Sir George Back, Dr. Richardson, MM. Simpson, Dease, and others, close along the shore that bounds the Polar Sea on that part of it, and the favourable appearance of that sea for navigation, as far as the power of vision extended, together with the absence of all islands, except small rocky patches near the coast, from the 115th meridian W. to Behring's Straits—this ascertained state of things affords a well-grounded hope of a successful issue. As far as depends on my judicious and enterprising friend Sir John Franklin, and his energetic officers and seamen, I have the fullest confidence that everything will be done for the promotion of science, and for the honour of the British name and navy, that human efforts can accomplish. The name of Franklin alone is, indeed, a national guarantee; and proud shall we geographers be if our gallant Vice-President shall return after achieving such an exploit, and gladly I am sure would we then offer to him our Presidential chair, as some slight recompense for his arduous labours.

*Admiralty Surveys.*—All the Admiralty Surveys which I enumerated in my address of last year are continuing their operations except the following:—*Coast of Lancashire.*—Commander Denham, who for the last three years has been employed on this survey, has now brought it to a conclusion, and is, we believe, preparing his drawings for the Admiralty. *W. Coast of Ireland.*—Commander Bedford has commenced the survey of the western shores of Sligo, Galway, and Clare. *Loughs Correb and Mask.*—Lieut. Beechey was last year appointed to the examination of these navigable lakes, and has now made considerable progress in their survey.

*Of Foreign Surveys:*—*The West Coast of America* is about to be surveyed by Captain Kellet in the 'Herald,' and Lieut. James Wood in the 'Pandora.' They will commence at Guayaquil (to which place the survey had been extended by Captains Fitz-Roy and Belcher, and published in 16 sheets), and proceed northward along the shores of Granada, Guatemala, and Mexico, of which long line of coast little is accurately known.

*Azores and Madeiras.*—Captain Vidal has finally and successfully accomplished the interesting survey of these islands.

*Western Coast of Africa.*—The survey of the western coast of Africa, which occupied several years, and extended from the Mediterranean to the coast of Guinea, was suddenly arrested at Cape Three Points by a fever which attacked the crews of both the vessels employed there; but

another vessel, we understand, is now preparing, with which Commander Denham will continue the survey from that Cape to the Bight of Biafra.

We have received from the Admiralty all the maps and charts which they have published during the past year, among which are 8 sheets of the survey of the shores of Great Britain; 68 of the Mediterranean; 11 of the W. coast of Africa; 11 of the West Indies; 6 of South America; and 13 of the East Indies, China, and Australia.

*Survey of Ireland.*—During the last year, the 6-inch maps of the county of Limerick, in 61 sheets, and of the East Riding of the county of Cork, in 87 sheets, have been engraved and published. No one can view these sheets, and compare them with those of the counties published at the commencement of the survey, without being struck with the immense increase of detail which they exhibit. This is a gratifying example of advancement in topography, as well as of the increased perfection of the well-devised machinery, by which Colonel Colby achieved the townland survey of Ireland, and by which this extreme minuteness was attained, not only without any increase of expense, but concurrently with an actual and very large reduction; the work at its close having cost only about one-fourth the price per acre which it cost at its commencement.

One important result attending this insertion of detail may be here noticed. Among the primary objects of the survey was the provision of maps to form a basis for the valuation of townlands, with a view to the more equal adjustment of the local rates, which, in Ireland, are apportioned by townlands; and which being based on valuations long obsolete, had become a very unequal and often oppressive tax upon tenants. But it was not intended to extend this valuation to spaces smaller than townlands; subsequently, however, the introduction of the poor-laws into Ireland rendered a more minute valuation desirable, and by an act now before Parliament, consequent on a report of a Committee of the House of Commons which sat during the last session, it is enjoined that the valuation shall descend to farms and holdings. Here we have the most happy confirmation of the enlightened views which led Colonel Colby to introduce these very subdivisions, as soon as he could do so without additional expense. As might be anticipated, the Government have now resolved on completing also the maps of the northern counties. The field operations of the survey have accordingly been directed to this object, in concurrence with the contouring, which was commenced in the N. of Ireland last year. These operations materially assist and cheapen each other, as the contours naturally possess more local value, and are more easily identified on the grounds, when inserted on detailed than on skeleton outline; and

both operations are cheaper when performed at the same time. By the reduction of these contoured and completed sheets to the 1-inch scale, we shall possess also a general map, similar to that of England, with whose value we are all so well acquainted. In my address of last year I described some of the uses to which the electrotpe process had been applied in the survey of Ireland, and it is on duplicates produced by this process from the original plates, that it is intended to insert the contours and additional detail. I would recommend any member of the Society who may visit Dublin not to omit seeing the office of the Irish Survey, where these and various interesting operations are in progress, under the management of that excellent engineer, Captain Larcom. Among the other applications of contouring, a map has been there constructed during the past year, exhibiting by lines of equal altitude the relative quantities of land in Ireland, which lie within zones of different elevation. A reduced copy of this map is now upon our table, and various uses in drainage and cultivation, as well as communications, will readily occur to any one who examines it. Nor ought we to forget the curious light which it gives to the geologist, in the questions which raised beaches, and numerous phenomena of elevation and subsidence, present to his inquiry. It was constructed for the use of the commission, of which the Earl of Devon is the chief, and will accompany their report.

The topography of the Ordnance maps of Britain is peculiarly tested at this moment by the numerous railways which are everywhere projected ; a trial not only of their correctness in plan, that is, in the horizontal position of objects, but also in elevation (the third Ordinate of the French). In Ireland, railway projects have now become numerous ; and by aid of contouring maps, which are sold at a very low price, such projects have been brought before the legislature in a more perfect form, and at far less expense, than would otherwise have been practicable in a single session. When we see so many advantages flowing from the process of contouring, I am, indeed, fully sanctioned in saying, that the British Association for the Advancement of Science is entitled to the gratitude of the public, for having procured the sanction of the Government to the application of that admirable system. In connexion with the survey of Ireland, as well as that of England, I must further mention, that our distinguished associate, the Astronomer Royal, and the Rev. Mr. Sheepshanks have been engaged, in conjunction with Colonel Colby, in the astronomical measurement of an arc of longitude, extending from Greenwich to a station in the island of Valentia, on the coast of Kerry ; the results of which will shortly be given to the public.

*Memoirs in the last Number of the Journal, or more recently re-*

*ceived.*—The papers received by the Society since the last Anniversary have been commensurate with those of former years both in number and interest. Thus you have had read at your meetings—

An account of the successful ascent of the Karún and Dizful rivers of Persia, by Lieut. Selby of the Indian Navy, who took his steamer to within a few miles of Shuster, in the very heart of the southern provinces of the kingdom.

A description of routes in Kach'hi Gandava, and an account of the Beluchi tribes of Upper Sind'h, by Captain Postans; a paper of great practical importance now that Sind'h is annexed to our eastern possessions.

The Second Part of Captain Haines's valuable memoir of his survey of the S. and E. Coasts of Arabia, also a most valuable document in reference to our navigation of the Red Sea and Sea of Oman.

You have also listened with great pleasure and instruction to Sir Robert Schomburgk's account of his difficult and perilous journey from Pirara to the Upper Corentyne, and thence back to Demerara—a statement combining the exact determination of positions required by the geographer, with numerous details of the productions of a country not visited before by any European, and the most graphic delineation of the manners and customs of the strange people he met with, and the wild scenery through which he had to force his way.

A letter from Mr. Duncan has been communicated to you, describing his route from Annamaboe to the Amissa river on the western coast of Africa; the narrative is highly satisfactory from its unsophisticated style, and the evident truthfulness of its statements. Mr. Duncan, though not a scientific traveller, is intelligent and enterprising, and possesses all the requisites of an excellent pioneer in a country very little known, and of which he will no doubt give us an interesting account.

Mr. Consul Carew Hunt has favoured us with descriptions of the Islands of St. Mary's and St. Michael's in the Azores. In comparatively few words they make us acquainted with all the more important facts of the physical geography of these islands and their productions, as well as with the character and industrial pursuits of the inhabitants.

In that far distant and mysterious portion of the world, Australia, explorers have not been wanting; and the journey undertaken by the Governor of South Australia in person, into the south-eastern portion of that colony, with the favourable report he has given of the result of his exploration, have been communicated to the Society.

Mr. Eyre also, to whom, on a former occasion, you awarded your medal, has lately examined the lower course of the Darling, and thus

filled up a *lacuna* that existed in the geographical delineation of an important portion of that river. Captain Frome's exploratory journey to the country to the eastward of Flinders' Range, and his report upon it, has also been brought under your notice, by which it appears that the eastern portion of Lake Torrens is rather a depression of the soil occasionally flooded than a constant sheet of water, and that its deceptive appearance is due to the mirage. Sir Charles Malcolm has communicated to you the notes of Mr. Stuart Russell, giving an account of his discovery of a large river, in a position where he struck it, somewhere about 150 miles to the N.W. of Wide Bay, and which river he supposes to be the Boyne—a river not laid down upon any of our maps, but the mouth of which appears to be known to the colonists.

In respect to Asia Minor you have heard Vice-Consul Guarracino's note of his routes from Batúm to Artvin on the Júrúk, and to Erzurum.

A Memoir, containing practical information, on the Navigation of the Gulf of Mexico, with notices of Tampico, Tuspan, Vera Cruz, Tobasco, &c., by Mr. Peter Masters, and communicated to you by Colonel Colquhoun, has also been read; as well as Notes on South Africa furnished by Mr. Macqueen.

Of these papers some have already been printed in our Journal, and the rest will appear in subsequent "Parts."

Other papers and memoirs have been received, which will in due time be brought before you: of these I may mention

The Journal of a Mission to Tembo, by Mr. Thompson, communicated by Lord Stanley; and Itineraries and Geographical Notices of a portion of Bolivia, by Mr. Consul Masterton, communicated by the Earl of Aberdeen.

Of minor articles I may mention Professor Raffn's notice of the Museum of American Antiquities at Copenhagen, published in our Journal; some notes for the improvement of the map of Morocco, by Mr. Wilshire; whilst two communications, the one from Lieut. Crutenden, the other from Mr. J. Bird of the Bombay Asiatic Society, on the Hamyaritic or Hamaiaric inscriptions in Hadramaut; and an interesting note, by Professor Malden, on the Comparative Geography of the lower Borysthenes, have been read.

Before concluding this enumeration of papers received by the Society since its last anniversary, I must mention three notices on subjects of physical geography: the first, a note on the actual depression of the Caspian Sea, below the level of the Mediterranean, reduced and communicated by Mr. Struve; the second, some remarks on the freezing of rivers in North America, by Mr. A. C. Anderson; and, thirdly, a

notice by M. N. Khanikoff, on the drying up of the 'Tanghi Darya, formerly a Deltic branch of the Syr Daria or Jaxartes, to which, and to the paper of Professor Malden, I shall elsewhere allude.

I would here call your attention to the fact, that our Journal has hitherto been filled almost exclusively with the narratives of travellers; and although there cannot be a doubt of the value of the papers published in the fourteen volumes of our Transactions, or of the importance of giving publicity to the descriptions of countries little known, with accounts of their productions and their people, still, as the whole interest of geography reposes on the facts comprised under the term *Physical Geography*, it is much to be lamented that this important branch of our science should be, to a great extent, neglected by our countrymen. Independently of the interest which the various facts and phenomena of physical geography possess in themselves, their detail and discussion in the pages of our Journal would give variety to our volumes, and enlist the lovers of pure science into our ranks, as well as those who look to geography solely with the spirit of merchants and colonizers, or for that kind of information which may be so extensively gleaned from books of travel. In the long list (would it were longer still) of our members, are the names of many who do not quit their homes, but who are eminently distinguished for the variety and profundity of their scientific acquirements; many fully competent to understand, to appreciate, and to explain the influences of the grand physical laws of the universe, in determining and modifying the climate and soil of our globe, and the changes which its surface is undergoing. On climate and soil depend the productions of a country, and in great measure the manners, customs, and temperament of its inhabitants; and it is by the diversity of these elements that all the inhabitants of the earth are excited to that exchange of productions, which multiplies the comforts and increases the wealth of all, and which, by inducing inter-communication, spreads civilization and its blessings over the whole earth. It is therefore greatly to be desired, that the scientific men to whom I have alluded would boldly encounter some of the numerous interesting problems of physical geography; so that, blended with notices of the kind which we may term exploratory, our Journal may be varied with scientific discussion.

*New English Works.*—If I have pleasure in announcing publications which can in any way tend to advance the progress of geographical knowledge, your satisfaction and my own must be greatly enhanced when the name of the authors is an assurance of superior excellence. Mr. Cooley, known to geographers as a most conscientious and correct elucidator of any subject he takes in hand, and whose late work on the



'Negroland of the Arabs' has specially stamped his reputation as one of the first authorities on African geography, is now devoting his energies to the production of a 'Collection of Voyages and Travels,' under the title of 'The World Surveyed in the Nineteenth Century; or the recent Narratives of Scientific and Exploratory Expeditions, chiefly undertaken by command of Foreign Governments; collected, translated, and where necessary, abridged.'

When it is considered how very little is generally known here of the important explorations undertaken by foreign nations since Humboldt first delighted and surprised the world by the brilliancy of his descriptions and the novelty of his observations, we cannot but hail the forthcoming work of Mr. Cooley as one of the highest interest, and I must express my sincere hope that an enlightened public will duly appreciate the editor's laborious undertaking.

I may also bring to your notice another collection of Voyages, which is projected to be undertaken by the united efforts of the 'Cabot Society.' It is intended that this work shall include expeditions of discovery, voyages, travels abroad, pilgrimages, religious missions, colonization, foreign correspondence, and enterprises of every kind by which the British power has been extended upon and beyond sea.

The first volume of this Collection, under the title of 'The Classical Sources of British History, &c.,' by Mr. S. Bannister, is in the press. A second volume, entitled 'The Missionaries of Ireland and Iona, in the Sixth and Seventh Centuries, containing the Complete Works of St. Columba, Adamnan, &c.,' by the Rev. Dr. Giles, is prepared for the press; and a third is in hand, on the 'Intercourse of Ireland and the other British Isles with the Phœnicians, and other nations, before the invasion of Great Britain by the Romans.' Twenty-three other works are contemplated. The enterprise is therefore important in extent, and certainly not less so in its bearing upon geographical history. There cannot be a doubt of the existence in this country of a vast amount of valuable materials for the compilation of the several works announced by the 'Cabot Society;' and we have every reason to hope that the possessors of these materials will, with the well-known liberality of our countrymen in such cases, allow of their being consulted by the authors of the different histories. If anything can throw a doubt upon the successful completion of the projected publications of the association, it is the magnitude of the undertaking, and the consequently enormous amount of capital which must be expended upon it, with the little probability of an adequate return. As geographers and Englishmen, however, we must approve of works which, if executed in a style commensurate with their importance, must give us much valu-

able information respecting the early voyages of our countrymen, and place in a striking point of view that enterprising spirit which, from the earliest times, has distinguished them.

Mr. Hugh Murray of Edinburgh has published a new edition of Marco Polo, in which some errors of Mr. Marsden have been corrected.

Mr. W. F. Ainsworth has published his 'Travels in the Track of the Ten Thousand Greeks.' The author, well known to you by his able papers published in 'The Geographical Journal,' could hardly have turned his journeys in the East to better account, than by making them serve to illustrate the ever memorable Retreat of the Ten Thousand. Having gone over the greater part of the country through which the retreating army passed, he has had peculiar facilities for producing a good work on the subject, and the light he has thrown upon it constitutes his book a necessary complement to the Anabasis. Need we add that this is one among the many useful results arising out of the exertions of this Society, under whose auspices a great portion of Mr. Ainsworth's travels were executed?

Two works have been published relating to Africa. The first I shall notice is by Mr. Ignatius Pallme, and is entitled 'Travels in Kordofan.' Mr. Pallme, a Bohemian by birth, visited in 1837 the most distant portions of the country acknowledging the government of Mehemet Ali, with a view to the extension of commercial intercourse; and no traveller has ever given so complete an account of that region as Mr. Pallme. Its dreadful climate, its productions and population, the manners and customs of its people, the horrors perpetrated by its conquerors in 1821; the slave hunts, for which alone it appears the ruler of Egypt took possession of it, are all described in the most masterly manner. The importance of the gum and ivory trade is also particularly dwelt upon by Mr. Pallme; and upon the whole this is the kind of book, which we should like to see more frequently resulting from the explorations of travellers. Another work on Africa is entitled 'Travels in Southern Abyssinia,' by Mr. Charles Alexander Johnston. This publication is unquestionably one of considerable interest, particularly for the detailed and evidently faithful pictures it gives, of the manners and disposition of the native tribes with whom the traveller came in contact in his difficult and frequently perilous journey. A great talent for observation, patience under privation, with coolness and resources in difficulty, would, I doubt not, render the writer of this book, if better provided with means and previous study for the great purposes of exploration, a very efficient and trustworthy traveller.

*New Works on Asia—Bokhara and the recent Mission.*—Whilst speaking of Asia, I must also allude to two other works which have re-

cently appeared: the one, 'Travels in Luristan and Arabistan,' by the Baron C. A. de Bode; the other an English version, by the same author, of the Russian work of M. Nicholas Khanikoff, on 'The Khannat of Bokhara.' In the first of these I was gratified to find that the drawings by my deceased friend Sir Robert Ker Porter, of the ruins of Persepolis, are warmly commended for their fidelity. It is also very agreeable, in following the lively and spirited writer, to hear his observations on the writings of the ancient historians, as he traverses the less explored regions of Luristan and Arabistan, with which our associates Rawlinson and Long have already made us, to a great extent, familiar: the first, by arduous researches, both geographical, personal, and scholastic; the second, by his learned commentaries on earlier works descriptive of the country passed over by the great Macedonian conqueror. The observations with which Baron de Bode concludes his book are highly interesting as a *résumé* of all previous and present knowledge of the ancient Susiana; and the work is well illustrated with maps and sketches.

The work of M. Nicholas Khanikoff (of which I received from the author a Russian copy when I was last in St. Petersburg) has, thanks to Baron de Bode, appeared in an English dress. Notwithstanding all that our countrymen Burnes and Wood have written upon those regions, every one who covets accurate details concerning the geography and statistics of that most remote and most barbarous of the great Asiatic States (with which Russia has so long carried on an advantageous commerce, but with which, alas! we have had only relations of a most doleful character), must be well satisfied with the valuable matters of fact related by M. Khanikoff. Besides sketches of the prevailing and monotonous character of the vast plains and deserts which bound that country to the north, with disquisitions on the course of the various rivers and the deflection of the great Oxus (at no remote period) from its former course into the Caspian; and in addition to descriptions of the adjacent mountains and well-digested documents concerning the productions, population, habits, and customs of the natives, English manufacturers may well learn a lesson in these pages of M. Khanikoff, when they are told, that the coarser though *more durable* cotton goods of the Russian are preferred to those of our own country, which of late years have been too much fabricated for the cheap sale of a showy but slight article.

It is indeed from the real traveller only, who knows the habits of Asiatic people, that our manufacturers can acquire a correct knowledge of the nature of the goods likely to be in demand, in such regions as Bokhara on the one hand, and China on the other.

My brother geographers will doubtless be anxious to glean some in-

formation, however slight, concerning the fate of our unfortunate countrymen Stoddart and Conolly, from one of the few Europeans like M. Khanikoff who last saw them. Having specially interrogated that traveller on this subject, when I saw him in August last at St. Petersburg, I learnt from him that Colonel Stoddart had been for some time living with the Russian party in perfect security, and had even assisted in observations on longitude taken by M. Khanikoff. If this state of things had continued, there is no doubt that, whatever political events might have arisen, he would have been ensured protection, and might have withdrawn with his Russian friends. The arrival, however, of Captain Conolly naturally induced Colonel Stoddart to associate with his countryman; and unluckily the untoward events of the Afghan Expedition, combined with the receipt of a letter in *English*, which the Mussulmen had no means of interpreting, and construed into instructions for their conquest, backed by the treachery of an agent in whom they both placed confidence, led to the imprisonment and subsequent massacre of these ill-fated and gallant officers. This happened, however, long after the Russian mission to which M. Khanikoff was attached had left the country.

In alluding to so sad an event, I should do injustice to my own feelings and those of all whom I address, if I did not express my warm admiration of the energetic and disinterested exertions made by our associate, Captain Grover, to save (as long as the slightest hope remained) the lives of the two gallant English officers; and notwithstanding the melancholy result, as now affirmed to us by the journey of Dr. Wolff, we must all admire the devotion and courage with which that reverend gentleman carried out the noble mission, with which the friends of humanity had entrusted him.

#### ASIA.

*Persia, Hindostan, &c.*—Major Rawlinson, well known to the members of this Society for his very learned contributions to our Journal on subjects of comparative geography, being now stationed at Bagdad, has had the opportunity of making some highly interesting explorations at Bisitún, where he has collected many inscriptions which, when deciphered, will no doubt throw great light not only on the ancient history of the country, but collaterally on geography.

*Hindostan, &c.*—Since the last anniversary, vol. vii. of the ‘Trigonometrical Survey of India,’ containing the Report of the meridional arc from Beider to Dehra Dún, has been put to press under the immediate superintendence of our valued new associate Colonel Everest. It will be published during the ensuing summer. Vols. viii. and

ix. have been received from India. The former contains the Reports of the Calcutta and Bombay longitudinal series; the latter the Reports of the Budhou, Rangir, and Amua meridional series, and the Pilibet, Terai, and Himalaya longitudinal series. The triangulation of other meridians to the eastward is in progress, under the superintendence of Captain A. S. Waugh, the successor to Colonel Everest.

During the past year sheet 50 of the Indian Atlas, containing Agra, Bhurtpúr, Jeipúr, &c., and sheet 56, comprising part of the Nizam's dominions, have been published. Sheets 67 and 68, comprising the principal portion of the Dooab, will be completed in the autumn. These are based upon the triangulation directed by Colonel Everest.

As geographers, and apart from any political or commercial purposes which they may be calculated to promote, we cannot but look forward with great anxiety to the projects, still very imperfect and immature, for constructing two railways through the most interesting portions of the Company's territories in India. I shall only advert to the one project for carrying a railroad from Calcutta to Mirzapoor, just below the junction of the Jumna and the Ganges; and the other from Bombay, right across the peninsula to the course and mouths of the Godavery River, and the port of Coringa in the Bay of Bengal.

With respect to the maritime surveys of the coasts of India and parts adjacent, executed by order of the Court of Directors of the East India Company, the charts of the Gulf of Cambay, the Malacca banks, and coast of Kattiwar, by Lieut. Ethersey, I.N., have lately been published. The survey of the western side of the Gulf of Manaar, including the coast from Cape Comorin to Point Calimere, by Mr. Franklin, R.N., will shortly appear. That officer is at present occupied in surveying the eastern side of the Gulf. The coast of Africa from Cape Gardafui to Berburra has been surveyed chiefly by Captain Careless, I.N. The completion of the survey of the coast of Arabia, from Misenat to Ras el Had, may be shortly expected.

Here I may specially congratulate you on the renewal of the active services of our associate, General Monteith, of the East India Company's Engineers, the son-in-law of Mr. Murdoch, a learned geographer, one of our earliest friends and councillors, and one of the most ardent supporters of this Society. In former years, General Monteith, who has diffused much knowledge concerning the southern and eastern flanks of the Caucasus, was employed in deepening the important passage of Manaar, between Ceylon and the southern part of Hindostan—a most laborious and difficult operation. He is now about to proceed to complete that important work, which I have no doubt he will effect in the most perfect manner. In alluding to this operation, I might indeed

further mention many other labours of this distinguished engineer in different parts of Asia, of which he has a most extensive knowledge ; and whose opinion must be most useful to his country, whether as respects the condition of the rivers tributary to the Tigris and Euphrates, or the northern frontiers of Persia. I may also say that, amid his surveying journeys, General Monteith has never lost a single opportunity of collecting objects of natural history, many of which he has liberally placed at my disposal.

Lastly, in respect to Asia, it may be stated that M. Emile de Chamcourtois has explored Kurdistan geologically, and communicated a note of his observations in a letter to M. Elie de Beaumont ;\* and that the publication of M. Jacquemont's voyage, of which you have all heard, has been concluded.

#### AUSTRALIA.

In recapitulating the papers received by us since our last anniversary, I mentioned several relating to Australia, and said there was no lack of explorers ; in further confirmation of which I may state that Captain Sturt has proposed to traverse the whole island from S. to N., and from E. to W. : and although, upon this project being submitted first to the Colonial, and then to the Home Government, it was found impracticable from its magnitude, the Government, anxious to profit by the enterprising spirit and ability of Captain Sturt, recommended a modification of his views, and authorised an expedition to be conducted by him, to explore the country as far as the mountain chain supposed to be at some distance, in a N.W. direction, from the Darling, and to run parallel with that river. For this purpose the Government have contributed funds (2,500*l.*), and Captain Sturt is no doubt by this time far on his journey over, if not already returned from, the regions he was to explore. He was to ascend the Darling as far as Laidley's Ponds, and attempt to penetrate thence in a north-westerly direction. From the facilities granted by the Governor of South Australia, the liberality of the Home Government, and the known zeal and practical ability of Captain Sturt, we have every reason to hope that ere long we shall be made acquainted with a large and, from its proximity to the settled parts of the country, important region of the island.

In reference to the encomium which I last year thought it my duty, as it was my pleasure, to bestow on the gratuitous and important researches of M. Strzelecki along the great Cordillera of Australia, so I now congratulate you on the appearance of the volume, in which the

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\* *Comptes Rendus*, April, 1844.

condensed results of his travels are embodied. The trade of bookselling is, I regret to say, very adverse to the development of that species of detailed knowledge which geographers specially covet, particularly from those who describe new lands; hence this able and industrious explorer has been necessarily compelled to abstain from giving us his views in the form of a narrative, followed by general inferences, and to abridge that style of graphic description in which I know he excels. The work, however, which is now produced, small though it be in relation to what M. Strzelecki could bring forth, is a well-arranged and methodical view (geographical and geological) of a great and slightly known chain; and he is entitled to our warmest thanks for considerably improving our acquaintance with the physical features and structure of this lateral back-bone of the vast south-eastern continent, and for presenting to us a new map of that part of the world.

*Future Prospects of Intercourse between the British Colonies of Asia and Australia.*—If on a former occasion I specially dwelt on the desirableness of completing a survey of the eastern Cordillera of Australia, and on the urgent reasons for raising Port Essington in the scale of maritime establishments, I am now impelled to refer to another operation in those south-eastern seas, which seems to me to be a great maritime desideratum. I speak of the attainment of a more correct knowledge than we now possess, of the seas, coasts, currents, and winds of that portion of the surface of the globe, which lies between our East Indian and Chinese possessions on the N.W., and our chief colonies of Australia on the S.E. The projected establishment of a continuous periodical chain of steam communication between Great Britain and China, by the Straits of Malacca (no wild vision), suggests the possibility of a branch line of packets from this great trunk line to Sydney being also established at no distant period; and if so, the most eligible line for such branch would seem to be from Singapore through Torres Straits.

After advertng, on a former occasion, to the great advantages to be derived from the colony of Port Essington, whether commercially or politically considered, I specially cited the opinion of that very intelligent young officer, Captain Owen Stanley, that great benefits might follow from a survey of the seas, coasts, and fertile islands north of Australia, which are grouped around Timor. I would now further throw out for your consideration, as an object highly deserving the attention of a government, solicitous to provide for the enterprising commercial interests of Great Britain, that a more extended, nay, a general exhaustive, survey should be undertaken, of all the tracks, which such steamers as I have contemplated may be destined to follow. As British geographers we must naturally wish that the fragmentary character of the information we

possess, respecting the winds, currents, and shoals of that region, and of the best practicable line of communication, should be speedily augmented, corrected, and extended, whilst commercial men would rejoice in the acquisition of knowledge, which might be turned by them to good account. The region I allude to may be regarded as a great gulf, whereof the chief Australian headland on the W. is Cape Harvey, a little S. of the tropic of Capricorn, and its eastern limits the Isle of Pines at the S. extremity of New Caledonia, a little N. of the same tropic. The chief western shore of this gulf is, in fact, the eastern coast of the continent of New South Wales; its eastern shore the Isle of Pines, New Caledonia, the Archipelagoes of Mallicolo, Queen Charlotte, the Solomon Isles, and the Louisiade; its bottom being the northern extremity of the coast of New Guinea. The width of this gulf, in the parallel of the tropic, is about  $15^{\circ}$  of longitude, and at the bottom, or in lat.  $10^{\circ}$ , about  $5^{\circ}$  of longitude. In a general sense it may be described as extending, in a N.W. direction, from about lat.  $24^{\circ}$  S. to lat.  $8^{\circ}$ . Forming an angle in this gulf lies Torres Straits, or the channel which connects the sea of Eastern Australia with the Asiatic Archipelago. Now, if I am correctly informed, our acquaintance with a very considerable portion of this region is still very imperfect; for though Cook ran along the greater part of the eastern coast, and though Flinders, King, and Stokes have successively explored portions of it with great ability and considerable detail, there is still much to be added respecting inlets, heights of adjacent land, currents, and other essential points of inquiry. Though the W. coast of New Caledonia, and the Archipelagoes before-mentioned, have been examined by Bougainville, Cook, Bligh, and others, its exact line has not yet been thoroughly laid down, the heights of its promontories are for the most part little more than conjectural, and the openings between the islands, whether as to number or extent, are not well ascertained. Towards the bottom of the gulf, the coast of New Guinea, from Cape Rodney of Bligh to the north-western extremity of Torres Straits, appears to be known only from the observations made on board the 'Harmuzeer' and 'Chesterfield,' as published by Flinders. Concerning the waters of the gulf, thanks to our adventurous navigators, Cook, King, Flinders, Stokes, and Blackwood, we already possess a considerable amount of knowledge, particularly as respects Torres Straits and the Barrier Reefs; but still much remains to be worked out.

Between the straits and the chains of islands forming the W. side of the gulf, for example, the sea and its shoals and islets are only known from the direct passages of Surville, Bougainville, Cook, Flinders, and those of a few transient merchantmen, or an occasional ship of war.



Again, though it is understood that for nine months of the year the prevailing winds blow up the gulf, or from the S.E., there appear to be many local exceptions; and I am not aware that the passage through Torres Straits from the westward has ever been attempted. Looking to the dangers of its reefs, the transit of sailing vessels during the prevalence of the south-eastern winds could never be thought of. A main point, therefore, to determine is how far such a passage may be practicable during the remaining part of the year.

The whole subject, indeed, of the direction, intensity, and steadiness of the winds throughout the great gulf in question, as well as the nature of the currents, opens a fine field of nautical research. The indraught of Torres Straits, and the general set of the winds during the season, in which that sea has been hitherto navigated, may explain what has been observed, that without the reef, and in mid-sea, a predominating current has been found to set in to the W. of N. But it is right to endeavour to know, whether during the remaining three months of the year the same current prevails, what are the currents, what the openings in the cluster of islands forming the W. side of the gulf, and what effect such local currents may have in modifying the predominant stream. I presume not to offer these suggestions in any other spirit than that of an anxious looker-on; for I well know that, as far as means have been allowed to them, our gallant and intelligent surveyors have nobly done their part; and I further know that the eminent geographer, who so ably directs the hydrographic department of our naval service, requires no stimulus from a landsman to carry out any project which may prove beneficial to his country.

I am aware that even whilst I speak, Captain Blackwood is employed in the arduous survey of Torres Straits, and that already a chart has been prepared in the Hydrographer's Office, which will shortly be given to the public; but this is part only of the scheme required; and, desirous to see it much extended, I am now appealing to those of our rulers, who take prospective views of the future development of British commercial enterprise, or the contingencies of war, and who may therefore naturally wish to render, as speedily as possible, our previous knowledge of these seas more perfect. When we consider that the most direct line of communication between Singapore, Hong Kong, and the subordinate settlements of that great field of commerce on the one hand, and all our important Australian colonies on the other (Swan river alone excepted), lies through this gulf, and when we know that New Zealand, an important British settlement, forms the extreme south-eastern limit of this great gulf, there is every prospect that eventually it must become a high road of intercourse, which will knit together the

islands with our great Asiatic and Australian colonies; hence therefore I venture to say that a complete *exhaustive survey* of the whole of the gulf above defined would be a true service to science, and a noble spur to national industry.

## AFRICA.

Of the geography of Africa our knowledge advances but slowly, considering the vicinity of that continent to Europe, and the resources of every kind which the present age places at our disposition. With Algeria, indeed, the exertions and ability of the French engineers are making us well acquainted; and the liberal views of the Ruler of Egypt have so completely thrown open the Delta and the whole of the lower course of the Nile to the investigation of travellers, that we have become nearly as well informed regarding that river and its banks, as we are of the Rhine. Our attempts to put a stop to the odious trade in slaves, and the numerous vessels that cruise, in consequence, along the western shores of Africa, have also increased our acquaintance with the coast, and the mouths of its rivers in that direction. Along the E. coast we have done comparatively little; and as for Abyssinia, which of late years has been the scene of so many explorations, though now much better acquainted with it than formerly, it is still very partially known to us; whilst the hydrography of the Galla country, in the eastern portion of which extensive rivers take their rise, and where, it appears, the source of the White Nile is to be sought, is quite unknown. Indeed, it would be difficult to instance any part of the world, whose streams have given rise to a greater diversity of opinion respecting their course. Thus, upon the whole we have a most limited knowledge of Africa, and that little confined almost exclusively to the coast: of the interior we are nearly as ignorant as we ever were; and, unfortunately, the hostile disposition of the inhabitants, except on a few points, and the fatal influence of the climate, still oppose obstacles to research of the most formidable nature. From Egypt we have just received the first part of a new publication in French, entitled '*Miscellanea Egyptiaca*,' published by the Historical and Literary Association of Egypt, and printed at Alexandria. This Society, founded on the 15th February, 1842, by Messrs. T. E. Prisse and H. Abbott, has now acquired consistency, and reckons among its members many well-known Eastern travellers, and individuals of scientific and literary eminence in Europe. If we may judge from its Transactions already published, it bids fair to take a high standing among the scientific institutions of the day. The first part of their first volume contains '*An Account of a Tour to Bubastis, Sebennytyus, and Menzaleh*,' by Sir Gardner Wilkinson; '*Extract of*

a *Journal of Travels in Abyssinia*,' by J. G. Bell, Esq.; 'Account of an Excursion into the Eastern Parts of Lower Egypt,' by Mr. E. Prisse; 'Notes on Sennaar,' by A. D. R.; and 'Observations on the Climate of Egypt,' by Dr. Verdot. This enumeration sufficiently shows that our own peculiar science has a large share in the labours of the Egyptian Association, a circumstance which, as geographers, we hail with pleasure. We think the Association highly valuable, and I am sure all present will join in best wishes for its continued prosperity.

*Abyssinia.*—Among the papers just enumerated is one by Mr. Bell. It will be remembered that in my last year's Address I mentioned this young officer of the Indian navy, and spoke of his having been dangerously wounded while travelling in Abyssinia. Those who wish for details of his adventures will find them in the '*Miscellanea Egyptiaca.*' He travelled in the years 1840, 1841, and 1842; and although his paper does not contain much geographical matter, still every little is of interest, relating to Abyssinia. The traveller's account of the desperate attack made upon himself and attendant by eight armed men, and which, notwithstanding the great courage evinced by the two travellers, ended, naturally enough with such powerful odds, in their being both most desperately wounded, is a fresh proof of the dangers and sacrifices, by which the increase of a little geographical knowledge is too often purchased.

I also mentioned last year, among other travellers into north-eastern Africa, Messrs. Ferret and Galinier, but could say nothing of the result of their labours, which was not at that time known. Since then a report has been made to the Academy of Sciences of Paris, by a committee appointed for the purpose, upon the labours of these gentlemen.

It appears they were abundantly supplied by the French Government with instruments. After remaining eight months at Cairo, in order to learn the Arabic language, they embarked on the Red Sea, accompanied by Messrs. Bell and Rouget. They arrived at Djiddah in 33 days, and sojourned there a month. Here they were not idle, but constructed a map of Hedjaz and Asyr. Leaving Djiddah on the 21st October, 1839, they arrived in 9 days at Massowah, where they landed, and, without loss of time, proceeded to Adowa, the capital of Tigré. They explored a great part of Tigré and Semen, often in the midst of great difficulty arising from the unsettled state of the country. In May, 1842, they were at Gondar, whence, taking different routes, they returned to Massowah in August. Here the excessive heat forced them to embark immediately. They landed at Cosseir, whence they crossed the desert to Thebes, and then descended the Nile to Cairo. On the 23rd January, 1843, they arrived in France, having been absent three years and three

months. M. Rouget had died, and also M. Schœfner, who had accompanied M. Lefevre. The death of M. Dillon, who was buried by the present travellers, I have already had occasion to mention.

The principal fruit of Messrs. Ferret and Galinier's journey is the map they have constructed of a considerable portion of Abyssinia: the main points in this map have been determined by astronomical observation of the latitudes of 9 points, and by the longitudes of Intetchaou, of Adde Costi, and of Axúm; the features of the country are filled in by bearings and distances, and the modes usually employed in military recognizances. The directions of the rivers also have been more accurately laid down. Thus the Assam, on which the capital of Tigré is situated, is said by Messrs. Ferret and Galinier to flow to the S. and not to the N., as laid down by all former travellers except Rüppell. The Mareb was ascended, and the longitude and latitude of its source determined. Other rivers, known only by name, have been laid down with tolerable accuracy. The Tacazi is also rectified, by the travellers' own observations, and by information acquired in the country, from its source to its junction with the Nile in Sennaar. Tigré and Semen have been mapped in great detail.

The heights of several mountains, &c., have been taken barometrically, though not by corresponding observations. Mount Deljem was found to be 4620 metres high, and at this elevation there is always snow. Numerous meteorological observations were made in Tigré. No magnetic observations were made; indeed it appears that in providing the instruments for the scientific pursuits of the expedition, magnetism was overlooked. A geological map of Tigré and Semen and nine sections of the country, the whole coloured, have been prepared, together with a descriptive memoir of the primary, transition, secondary, and tertiary formations of the ancient volcanoes, the thermal springs, the iron and salt mines, and fossil combustibles, specimens of which have been brought home. The travellers have also made a collection of birds; though, after Rüppell, there was little to glean in that department of natural history. Among the insects collected there are 140 new species. Of plants, 600 had been collected; but, the travellers having been plundered, only 250 specimens were brought away, of which, however, 60 are entirely new. Particular attention has been paid to those vegetable productions that are applied by the natives to useful purposes, and several that are curious in this respect are mentioned in the Report of the Committee: one produces a very rich indigo colour; the mixture of two others gives to leather a beautiful red dye. The geographical position and height of the *habitat* of plants have not been neglected. A collection of seeds was brought away, but unfortunately lost; a casualty which had been provided

for ; and a second supply is expected to arrive safe. I am happy to add, that the Academy recommends that the fruits of this expedition be forthwith published.

In the 'Comptes Rendus' will be found a Report of the exploratory expedition into Abyssinia, under the direction of M. Lefevre, assisted by MM. Petit, Quartin, Dillon, and Vignaud. These gentlemen commenced their operations in the Dhalac archipelago, opposite to Massowah, in the Red Sea, where they convinced themselves that these islands, together with the whole of the coasts on both sides of the Red Sea, have been upheaved. The results of their travels are, an account of the physical geography of the country, vast collections in natural history, particularly birds, a herbal of 1600 or 1800 plants, of which 500 or 600 are new species, and a topographical map of the country from 16° N. to 8° S. latitude, and from 35° to 38° E. longitude. The base of the triangulation was a line extending between Dama Galela and Nahailé, two points from which a great extent of country may be seen. Forty positions were astronomically determined. Meteorological and magnetic tables have been prepared, as also tables of the productions of the three kingdoms, notices of commerce and navigation, vocabularies of the languages, accounts of the religion, laws, manners, and customs of the people ; with geological maps and sections, and numerous drawings. There can be little doubt that the two last-mentioned travels will materially add to our knowledge of a great part of Abyssinia, and we therefore look with interest for their early publication. Two of the fellow-travellers of M. Lefevre died, as I stated in my last year's Address. The melancholy details of the death of M. Dillon, as given by M. Petit (himself subsequently drowned), and reported by M. Lefevre, will be found in the 'Bulletin de la Société de Géographie' for January of the present year.

In speaking of French travellers in Abyssinia, I must not omit to mention M. Antoine d'Abbadie, who, with his brother Arnauld, has been for so many years in that part of Africa. On the 3rd of January a letter was received in Paris from M. d'Abbadie, dated Saka, 16th September, 1843, in which the traveller states that he had passed through Guderu and Jimma to Saka, in Euarea. He gives it as his opinion that the river Omo is probably the same as the Djob, or Juba, or Gojeb, which he writes Gwadjab, and which, after receiving the Gibbi, falls into the Indian Ocean. He formerly thought that the Waby was an affluent of the Jubba, but is now satisfied that it enters the sea at Magadoxo. He says he remained two months at Saka, and made many observations of lunar distances and hour angles, &c., for latitude, which he has sent home to be calculated. He further states, that according to a well-

informed Mohammedan, a native of Dar-Sale, who has been twenty-two years in Enarea, the Dedhesa river is the same as the White Nile, but that this proved to be an error. The Dedhesa, which runs due N., as laid down by Dr. Beke (see part ii. of vol. xiii. of our Journal), not only runs to the Bahr-el-Azrek, or Blue Nile, or Abai, but is regarded by M. d'Abbadie as the principal branch of that river, in which he perfectly coincides in the opinion entertained by Dr. Beke, that the Abai is not the main branch of the Bahr-el-Azrek. The Baro he regards as a western branch of the White Nile. A letter, of the 7th October, from Geddeh, states, that M. d'Abbadie had returned from Euerea. There has also been received from him a letter, dated the 5th August, and we find in the 'Athenæum' one still later from Gondar, dated September, and addressed to our foreign secretary, M. Renouard.

*Abyssinia and Galla.*—*Charles Tutschek.*—Before quitting the subject of explorations in Southern Abyssinia and in the neighbouring country of the Galla, I beg to pay a tribute of respect to the meritorious labours of the late Charles Tutschek, a native of Bayreuth in Franconia, who, soon after the commencement of his studies as a jurist at Munich in 1837, (by the accidental circumstance of his having been appointed to take charge of the poor blacks, natives of the Galla and other neighbouring countries, who had been brought to Europe by the Duke Maximilian of Bavaria,) was induced to devote himself most ardently to the study of the Galla language. By the help of these natives, one of whom was a Galla and another a Darfurian, Charles Tutschek was soon enabled to collect a sufficient knowledge of the language to put to the proof the various words brought home by Ludolf, Brown, Salt, Seetzen, Burckhardt, Rüppell, and Bruce; and being supported by the encouragement and advice of Carl Ritter of Berlin, whilst he evinced unremitted patience and good sense in eliciting words and sentences, and principles of the grammar, and facts, and places, from his own illiterate pupils, he at length succeeded in compiling the materials of a lexicon, and a grammar of the language. Unhappily for the cause of literature and geography, C. Tutschek, when on the point of setting out to visit the country on whose resources and idioms he had so long dwelt, with the hope of rendering himself useful to the ignorant Gallas, and to his own enlightened countrymen, was cut off by disease in September, 1843.

The task of editing his posthumous writings was left to his brother, Lawrence Tutschek, who, in 1844, published the Lexicon, dedicating it to Maximilian, Crown Prince of Bavaria; and in the course of this year he has succeeded in giving to the public an 'Elementary Grammar of the Galla Language,' dedicated to one of our members, Sir Thomas D. Acland, who is also one of the warmest friends and a most liberal pro-

moter of the cause of African civilization, and on whom may be said to have descended the mantles of a Wilberforce and a Clarkson.

Nothing can more effectually tend to improve our knowledge of the still unknown portions of the globe, than a preparatory acquaintance, on the part of the adventurous traveller, with the language of the natives. It presents the readiest means of ensuring a grateful welcome in the hut, and in the palace.

*S. Africa.*—Descending now the E. coast of Africa, we learn by a letter communicated by Mr. Macqueen, not to ourselves, but to the Geographical Society of Paris, and printed in their Bulletin for August, 1844, that Mr. Krapf was at Brava in December, 1843; that he had entered the Jub, over the bar of which there was, in the dry season, only 2 feet of water, but having 15 or 20 feet within the bar. The lake said by Lieut. Christopher to be without outlet, and to be the recipient of Haines river, Mr. Krapf says is nearer to the sea than was before imagined, and that it is only two or three days' journey from the town of Juba. Independent of this information, there is a passage in Mr. Macqueen's letter to M. Jomard, which, as President of the Royal Geographical Society of England, I am bound to notice. Mr. Macqueen says, "*Je voudrais engager mon pays à suivre les traces du vôtre, à faire quelque chose pour l'amélioration de l'Afrique.*" Far be it from me to wish in the least to underrate the efforts made by our neighbours in the cause of African civilization; but we must vindicate our own claim to having sacrificed more money, more lives, and made greater efforts than all the other countries of Europe put together for ameliorating the condition of benighted Africa. France has abundance of just claims of her own of the highest order, and with all she is now doing, or has done, she will be the last not to admit the due merits of England.

It is indeed unnecessary to call your attention to the millions which for this object the British nation sacrificed on the altar of humanity, or of our continued efforts to carry out and complete what Parliament and the country have considered a righteous cause. I will simply add, that even unaided English travellers are now striving to explore tracts of Southern Africa, which no European traveller of the last century has ever trodden. To my great surprise, I recently conversed with an ardent and accomplished youth, Lieut. Ruxton, late of the 89th regiment, who has formed the daring project of traversing Africa in the parallel of the Southern Tropic, and has actually started for this purpose. Preparing himself by previous excursions on foot in N. Africa and Algeria, he sailed from Liverpool in December last in the bark 'Royalist' for Ichaboe, now so well known for its guano; from this spot he was to repair to Walvish Bay, at the mouth of the Kuisiss river, where we

have already mercantile establishments. The intrepid traveller had received from the agents of these establishments such favourable accounts of the natives towards the interior, as also of the nature of the climate, that he has the most sanguine hopes of being able to penetrate to the central region, if not of traversing it to the Portuguese colonies of Mozambique. If this be accomplished (and there are traditions of its having been done in former times by the Portuguese), then indeed will Lieut. Ruxton have acquired a permanent name for himself among British travellers, by making us acquainted with the nature of the axis of the great continent of which we possess the southern extremity. I have much pleasure in adding, that the Admiralty have sent out instructions to the naval officers on the coast to afford Lieut. Ruxton every assistance, and I have no doubt that our member, Mr. Bandinel of the Foreign Office, so zealous in our cause, will aid, by every means in his department, the young and gallant adventurer.

Mr. Ackerman has started from Paris for Madagascar, where he proposes to remain some time. The Academy of Sciences has furnished him with instructions on the principal objects of research, which should fix his attention. We learn that the same individual has presented to the Academy a project for improving the salubrity of the Island of St. Mary's, off the coast of Madagascar.

In the 'Athenæum' for August we find it mentioned that M. Maizan has received a commission to explore Southern Africa. He is to enter the country at Zanzibar and join the Arab merchants, who leave the coast at certain periods of the year for the interior.

The French commander, H. J. Matson, and Capt. Morell, have made numerous observations, hydrographical and meteorological; the former on the W. coast of Africa, S. of the equator, and the latter along the coast of Cape Colony; while the commandants, P. d'Orcel and Lunanoff de Kerdudall, have explored the eastern coasts of the Mozambique channel.

#### AMERICA.

*N. America.*—Among the geographers of eminence, whose death it was my painful duty to notice in my Address of last year, was M. Nicollet, whose labours along the Mississippi and Missouri I also mentioned. We have since then been favoured, through the kindness of Mr. Greenhow, with M. Nicollet's map, in 6 sheets, embracing the whole course of the mighty Mississippi, and that of its equally important affluent, the more rapid and tortuous Missouri, together with the vast region lying between these great arteries of the N. American continent. This map is of the greatest importance in itself as depicting the hydro-



graphy of that part of the world with an accuracy of detail sought for in vain in all preceding maps ; and its value is still further enhanced by the very able report of M. Nicollet, by which it is accompanied, and for a copy of which we are also indebted to Mr. Greenhow. This report contains, first, a succinct account of the physical geography of the country embraced within the limits of the map, including a narrative of the movements of the expedition during the years 1838-9, and an account of M. Nicollet's visit to the sources of the Mississippi in 1836 ; and, secondly, an abstract of the principles and methods, by which he was governed, in making his observations both for astronomical and physical geography. There are also three appendices, the first of which presents a tabular view of the geographical positions on which the construction of the map is grounded ; the second is a catalogue, drawn up by Dr. James Torrey, of the plants obtained during the expedition ; and the third, a list of the fossils of the more important localities.

In this very interesting report, the physical features of the country, the productions of its surface and its geology are detailed ; the manners, customs, and language of the tribes met with, are also succinctly described ; but the exploration of the portages at and about the sources of the Mississippi may perhaps be esteemed the most valuable portion of M. Nicollet's labours. The account of the pseudo-volcanoes along the Missouri is also very curious. He rightly attributes their origin to those singular centres of slow combustion, which the mineralogist Patrin erroneously considered to be the cause of *real* volcanoes ; viz. the penetration of water into the pyritiferous strata, and the consequent decomposition of the sulphuret of iron. The sources of the Mississippi had been already explored by Mr. Schoolcraft and Lieut. Allen ; but M. Nicollet is, we believe, the first traveller who has carried with him astronomical instruments, and employed them along the whole course of that river, from its mouth upwards. The report contains also a very interesting sketch of the early history of St. Louis. Altogether the map and memoir are very valuable additions to the geography of N. America.

I shall say nothing of J. C. Fremont's exploration of the country lying between the Missouri and the Rocky Mountains, of Mr. Josiah Gregg's work on the 'Commerce of the Prairies,' of Mr. Greenhow's 'History of Oregon and California,' as, thanks to the kindness of Mr. Thomas Falconer, our Journal contains that gentleman's valuable analytical notices of these several publications ; whilst his recent work on the question of the rights of Great Britain to the Oregon territory is satisfactorily deduced from the original rights as derived by us from the

cession of its first discoverers, the French. I must here, however, mention another work by M. Dufflot de Mofras, entitled 'Exploration du Territoire de l'Orégon,' in 2 vols. This publication has been made at the expense and under the direct sanction of the government of France. Though not devoid of interest, more especially at the present moment, we do not find in it any new facts observed by the author; neither is there any journal to enable us to verify the track, which he has marked on his map as the course of his journey. Although politics are not our object, I cannot fail to observe that, however indisposed to favour British interests, this author is compelled to admit the validity of the English claims to the Oregon territory.

There has also been published a map of the boundary line between the United States and the adjacent British dominions, from the mouth of the Ste. Croix to the intersection of the parallel of 45° N. lat., by Major Graham, with sections.

Mr. William B. Hodgson has likewise published at New York an ethnological work, entitled 'Notes on Northern Africa, the Sahara, and Soudan, &c.,' which is well spoken of; and his observations on the ancient history of the N. of Africa, and the affinity between the Berbers and the ancestors of the ancient Egyptians, are said to be worthy of consideration.

*Central America.— Passage across the American Isthmus.—* Having formerly adverted at some length to the projects which had been at various times set on foot concerning the execution of canals, railroads, or passages for commerce, across the great isthmus of America on five parallels of latitude, I am now happy to state, that in consequence of the able reports on the subject, and the confidence reposed in Don José de Garay, and the parties who are at the head of this great Mexican project,\* a company has been formed, and is about to be publicly announced, to open a canal from the lakes near Tehuantepec, on the Pacific, across the Cordillera (there very low), to the navigable portion of the river Cuazacualco, which is navigable for 80 miles from its mouth in the Bay of Campeachy or Gulf of Mexico.

I have already so fully anticipated all I could say on the desirableness and vast importance of the execution of such a project, and the British public are now in possession of such clear and copious documents in the work of that skilful engineer, M. Moreau, that I shall restrict myself to the gratifying announcement made to me by one of our members, Mr. De Morgan, that the company formed consists of Mexican, British, and French interests; that the canal is to be cut from the higher portion of

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\* For an account of Don José de Garay's survey of the isthmus of Tehuantepec, see the able article by Mr. Thomas Falconer in our own Journal.

the river Cuazacualco to the lakes on the shores of the Gulf of Mexico ; and that it will be made on the same scale as the Great Caledonian Canal, and therefore passable by vessels of 1000 tons burthen.

When we reflect on the vast saving of nautical risk, time, and expense, which this short cut to the Pacific and all colonies, *in esse* and *in futuro*, whether on the Oregon or elsewhere, to which British enterprise can extend, and think of the vastly greater dangers and difficulties of doubling Cape Horn than those of rounding our Orkneys and the Fitful Head, we can have no hesitation in wishing hearty success to a company, which will thus at once clear away such obstacles, and open out such a grand field of commerce, by the execution of a project which has been a desideratum for centuries, and which never could be so well carried out as in these piping times of peace.

I am acquainted with little other information of interest, which this year has furnished respecting Central America, except that there is a strong probability that a German colony will be founded on the Mosquito coast ; the Baron de Fellcher having returned from thence with a favourable report on the soil and climate, and the Queen of the country having offered to a commission an extensive tract of land.

*S. America.*—Of S. America, in like manner, we have heard but little. French Guayana has been recently examined by M. Jules Itier, whose accounts have been successively published in the ‘*Annales Maritimes et Coloniales.*’ M. F. de Castelnau is pursuing his researches in the interior of Brazil with the assistance of the Brazilian Government ; when last heard of (22d March, 1844), he was at Goyaz. His intention was to proceed to the W. and descend the Tocantins river, returning to Goyaz by ascending the Araguay.

#### EUROPE.

*Sweden and Norway.*—We have lately received 7 sheets of the N. coast of Norway, and a similar number of the hydrographic survey of the southern provinces of Sweden. The former documents were put into my hands by our eminent foreign member Hansteen, when I visited the scientific congress of Scandinavia assembled last summer at Christiania ; but I regret that my rapid transit through Sweden and my geological pursuits did not enable me to communicate with our Swedish foreign members, except M. Wahlenberg. I hope, in revisiting Sweden and Norway this summer, to be able to bring from thence some new stores. In the meantime, I can announce to you that since our last anniversary, Professor Keilhau has published a geological map of the northern tracts of Norway in the second part of his ‘*Gæa Norvegica* ;’ and that when at

Stockholm I had, through the privilege kindly obtained for me by Baron Berzelius, an opportunity of inspecting a portion of a large lithological map of Sweden, which is in preparation, and in which the varied ancient crystalline rocks of that kingdom will be clearly indicated by the labours of competent mineralogists and surveyors, Messrs. Forsells, Erdman, Franzén, and Troillius. In making inquiries respecting the remarkable phenomenon of the rise of land in Norway and parts of Sweden, to which public attention was first called by Leopold von Buch, and which have been so much extended by the researches of Mr. Lyell, I was informed by Baron Berzelius that there is unquestionably a line from E. to W. across Sweden in the parallel of Solvitsborg, along which the ground is perfectly stable, and has not moved for many centuries. To the N. of it, however, the whole continent appears to have been raised very considerably at comparatively recent periods, and to be still undergoing the same process, the intensity of which increases to the N. The presence of sea-shells not distinguishable from those now living in the adjacent seas at different altitudes are the best proofs of such rise in previous times, and the marks affixed to the rocks prove that this elevation is still proceeding. To the S., however, of the stationary line, or throughout the province of Scania, it is now still more clearly developed, that the land is, on the contrary, undergoing that depression, which Mr. Lyell explained to the English public.

The person above all others who has worked out the phenomena of the depression of Southern Sweden is that eminent and truly learned man Professor Nillson of Lund, who combines a profound knowledge of natural history with great reading and research, and whose labours in ethnology have thrown so much light on the several races of men which from the earliest times have successively occupied his country.\* It is not only by showing that the village of Stafsten in Scania is now 380 feet nearer the Baltic than it was eighty-seven years ago, when Linnæus himself measured the distance, but also by indicating that an ancient pavement of the time of Trelleberg has been found at a level of 3 feet below the Baltic, that a depression is proved: Nillson has further shown that both on the E. and W. sides of Scania, turf or peat bogs (evidently terrestrial, because charged with fresh-water and terrestrial remains) are also under the level of the sea; and thus no doubt can be entertained concerning the movement of Scandinavia, which may be resembled to that of a plank upon a raised support, one end of which is ascending and the other descending

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\* The Royal Museum at Copenhagen affords a splendid illustration of the value of saving from destruction, in one national museum, the earliest implements of each age. Arranged according to the scheme of Nillson, the utensils of the successive ages of stone, brass, and iron are admirably developed by the able conservator, Mr. Thompson.

whilst the supported part is stationary. Regretting that I cannot now go further into a subject so interesting to all geographers as well as geologists, I promise you, if health and life for the next year be allotted to me, to enter more fully into the question. There are, indeed, many other phenomena which are not so strictly geological, but that I might, with perhaps some pleasure to yourselves, refer to them on the present occasion. Such, for example, are the views which I entertain of the successive changes in the outline of northern Europe at various periods anterior to our own, and the transport of the great blocks from Scandinavia, not only over countries to the S. (as had been erroneously supposed), but eccentrically, and in all directions. These matters can, however, only be safely handled in a separate work; and having stimulated your curiosity by a notice of them, I must refer you to my forthcoming work on Russia and the adjacent countries, in which I have endeavoured to explain these striking phenomena.

Lastly, in respect to those northern countries, I may say that Captain Roosen of the Norwegian engineers has lately published, at Paris, a new map of the northern provinces of Norway.

*Belgium.*—M. Linden, we understand, has returned to Brussels from a scientific mission in S. America, after an absence of three years.

Two additional sheets of the Topographical Survey of Belgium have been published, viz. Ostend and Bruges; also

A Nouvelle Carte Générale de la Belgique, par M. Vandermaelen, on the scale of  $\frac{1}{200,000}$ .

*Austria.*—In Austria has been published a General Map of Europe, in 24 sheets, by a Society of Geographers at Vienna; also an Atlas of the Austrian Empire, in 15 sheets; and a General Atlas, of 40 maps, besides many maps of ports or harbours. Some Statistical Tables of Hungary, and a Lexicon or Geographical Dictionary of the Austrian Empire, have likewise been published.

Colonel Hauslab of Vienna has published a set of Physical and Geological Maps, showing the natural distribution of the surface of the globe into Orographical, Hydrographical, and Geological basins.

A new Map of Krain, by M. H. Theyer, in 16 sheets, is in progress of publication; 4 sheets have already appeared.

A Map of Bohemia, by Kumersberg, in 4 sheets, is also being published; one sheet of it has been printed.

We learn from our foreign member Colonel Skirbanek, that the surveys of the kingdoms of Bohemia and Hungary, under the direction of the Military Geographical Institute, have been continued on both sides of the Danube. The triangulation of Transsylvania has been finished, and an azimuth measured near Lemberg. It is proposed to continue

the survey next year, when the triangulation will be carried over the N. of Germany in the parallel of Buda by one set of surveyors, while another, beginning its operations in Transsylvania, will push on towards Tameswar and the Banat. At Spalatro, in Dalmatia, where the latitude has been already observed, an azimuth will be measured; and at Fiume, where the azimuth is already known, the latitude will be determined. It is also intended to connect the Naval Observatory at Venice with the general triangulation of Austria, by means of the astronomical admeasurements of the arcs of the meridian between Spalatro and Vienna, between Fiume and Prague, and between Venice and Munich.

The Military Geographical Institute is now engaged on a Special and a General Map of Moravia; of the former, two livraisons have appeared.

The drawing of the Special Map of Bohemia, on the scale of  $\frac{1}{144000}$ , is begun, in order to its being engraved on copper.

*Saxony.*—Philology being a branch of ethnology, and this latter intimately connected with geography, the Society will be glad to learn that an association has been formed at Dresden, under the presidency of the celebrated Orientalist Hermann, for the furtherance of philological pursuits. The importance of philology, as affording data by which to arrive at a knowledge of the former relations, and present dispersion of the different families of mankind, cannot be doubted, and it is to be hoped that the learned and indefatigable philologists of Germany may succeed in elucidating a subject still enveloped in much obscurity. In connexion with this, the late discoveries of Hamyaritic, and Cuneiform inscriptions, and the attempts more or less successful of learned individuals to decipher them, have considerable interest.

The Baron V. Wrede, whose Notes of an Excursion in Hadramaut is inserted in our Journal, is publishing at Leipsig the account of his explorations in S. Arabia.

*Frankfort.*—M. Derfelden de Hinderstein has lately completed his important Atlas of the Dutch East Indies.

*France.*—In the Bulletin of the Geographical Society of France will be found interesting notices on Kurdistan, by M. Texier.

M. Vivien is publishing the Geographical History of Asia.

M. d'Avezac, who has so greatly contributed by his labours to the geography of Africa, has lately added to the work entitled 'Univers Pittoresque' an interesting volume on the ancient religions prevalent in the north-western regions of Africa.

The Société de Géographie of Paris has published a Grammar and Dictionary of the Berber Language, under the superintendence of M.

P. A. Jaubert ; and a French and Berber Dictionary has been published by order of the Ministre de la Guerre ; both of which works have been liberally presented to our library.

M. Gabriel Lafond, in the last volume recently published of his ' Voyage autour du Monde,' has given some highly interesting notices on the commerce of the Indian Archipelago carried on by the Malay Boughis.

It is probably known to you that in 1839 Mr. Walkenaer published an atlas, entitled ' Géographie Ancienne Historique et Comparée des Gaules Cisalpines et Transalpines.' The author has lately added an additional map to the collection, being that of Gaul at the epoch of the fall of the Roman empire in the West.

We have further been favoured by M. Daussey, one of our corresponding members at Paris, with the following notice:—

The survey of the coasts of France in the Mediterranean was terminated by M. Mounier in 1843 ; there remaining nothing to do but to determine the soundings further out. The death of M. Mounier having put a stop to a career, throughout which he had given proofs of great talent, M. Duperré, who had been his second in command at Martinique and on the coasts of France, was charged with the work. In 1844 all the western portion had been completed, and, with the permission of the Spanish government, the Bay of Rosas has been surveyed as far as Cape St. Sebastian. M. Duperré is now about to start for the eastern portion. The use of a steamer has greatly facilitated these operations.

Of other French engineers abroad, three are in China, one at the Marquesas, and one on the coast of Algeria, but no reports have yet been received from them. The 6th and last volume of the ' Pilote Français,' which completes the description of the northern and western coasts of France, has been published, so that this great work, which has been twenty-five years in completing by the corps of hydrographical engineers and their able director, M. Beautemps-Beaupré, is now terminated.

The physical portion of the voyage of the ' Vénus,' forming 5 volumes of interesting observations by M. de Tesson, has been published, and the atlas of the voyage is almost finished.

The physical portion of the voyage of the ' Bonite,' edited by M. Darondeau, is also rapidly advancing towards conclusion.

The engraving of the charts and plans, illustrative of the expedition of the ' Astrolabe' and the ' Zélée,' is also making progress, though nothing of it has yet been published. M. Vincendon Dumoulin, who has charge of the work, and who is also to compile the history of the voyage, has constructed several general maps and charts, composed partly from ob-

servations made during the voyage; several of these latter have been published, and others will shortly be issued.

M. de la Marche, who sailed in 1842 on board the 'Erigone,' commanded by Captain, now Rear-Admiral, Cecille, has brought hence from his voyage a great mass of magnetical and physical observations made in China, which have been received with great interest by the Académie des Sciences, and which are likely to be soon published.

M. Cazallon still continues his researches on the tides. He has established an instrument at Toulon, which uninterruptedly marks the movement of the tides, and he is about to set up a similar instrument at St. Servan.

M. Keller has made some very interesting observations at Cherbourg on the currents produced by the tides; and he is now preparing a memoir on the subject, which M. Daussy thinks will contain some new ideas.

M. Lefevre's voyage in Abyssinia is about to be published, and a description of the W. coast of Africa, by M. Bouet; as also the voyage of M. Raffenel. This gentleman was despatched in 1843 by the French Governor of Senegal, to explore the river Falémé, and the gold districts on its banks and on those of its tributaries. He visited the upper course of the Gambia, where, it is said, he has resolved, on data quite new, the question of the alleged junction of the upper streams of the Gambia and Senegal; and he has generally improved the maps of the W. coast, particularly as regards the hydrographical system of that region.

M. Daussy has further favoured us with a detailed list of 32 charts and plans, and six works of nautical descriptions and sailing directions, which have been published by the French Ministry of Marine during the past year, kindly adding the promise, that the greater part will be presented to the Society. The detail of the more important voyages now publishing is as follows:—Voyage of the Bonite; Historical Atlas, 9th and 10th part; Zoological Atlas, 13th part; Botanical Atlas, 9th, 10th, and 11th parts; Text, 6th livraison; Magnetical Observations, tome 1, 2nd part, 1 volume in 8vo., 7th livraison; Geology and Mineralogy, 1 vol. in 8vo., 8th and 9th livraisons; Zoophytology, 1 vol. in 8vo.

Voyage of the 'Vénus,' Text History of the Voyage, 4th volume; Physical portion, 4th and 5th vols.; and livraisons 6, 7, 8, 9 and 10 of the Atlas of Natural History; Voyage of the 'Artemise,' the 3rd vol. in 8vo.

With regard to the Scientific Commission of the North, in Scandinavia, Lapland, &c., of the Atlas there have been published from the 16th to the 18th livraison; of the Text, 4th livraison, being Geology and Mineralogy, 1st part in 8vo.; the 5th livraison, Meteorology, tome 1,



part 1; 6th and 7th livraisons, History of the Voyage, 1 vol.; and 8th livraison, Magnetism, tome 1, 2nd part.

Of the Voyage of the 'Astrolabe' there have appeared:—History of the Voyage, 6th and 7th tomes of the text, and 33rd livraison of the Atlas; of the Zoological Atlas, livraisons 11th to 15th; Botanical Atlas, livs. 7th and 8th; Anthropology, livs. 1st to 4th; and tome 1 of the Hydrography.

Lieut.-Col. Lapie, another of our corresponding members, informs us that the Dépôt de la Guerre has published eight more sheets of the Map of France, viz., Mirecourt, Auxerre, Tonnerre, Langres, Tours, Blois, Clamecy, and Avallon, which brings up the number already published to 93; 36 are now engraving, eight of which will be published during the present year; the survey of the remaining 28 will be completed also this year, making in all 157 sheets.

Numerous rectifications and additions have been effected in the maps of Algeria, and others very important are now making. Of these maps Col. Lapie has kindly promised to send copies for our library.

Two works by the Scientific Commission of Algeria are about to be published. The first of these, edited by M. Carette, Captain of Engineers, contains a study of the routes followed by the Arabs in the southern parts of the province, with a map on which all the routes are traced. The second contains researches on the Geography and Commerce of South Algeria, by MM. Carette and Renou, with three maps.

A volume will also shortly appear containing valuable information on the Algerian Sahara, by Col. Daumas, with three maps by M. Gaboriaud, Captain of the Etat-Major.

A large map of Morocco has been published by M. Renou from materials collected by him during his residence in Algeria. It is said to be rich in details of its northern portion.

M. Emile de Champcourtois has arrived in Paris from a scientific mission to Asia Minor, bringing with him some valuable results of his labours.

Finally, a very important work, the joint labour of the Marquis Fortia d'Urbain, MM. Guerard and Hase, Members of the Academy of Inscriptions, Mr. Miller, and Col. Lapie, has, after many years of laborious research, been completed. It is entitled 'Recueil des Itinéraires Anciens,' and comprises the Itinerary of Antoninus, the Peutingerian Tables, and a selection of Greek Periplus, in a 4to. volume, and accompanied by an atlas of 10 maps. This work has been obligingly presented to us by Col. Lapie.

*Spain.*—In Spain a translation of Balbi's 'Geography' was begun under the title of 'Compendio de Geografia Universal,' by Don Sebas-

tian Fabregos, the original being augmented and corrected, as far as regards Spain; but when one volume only was published, the translator died, leaving but 4 sheets ready relative to Spain, and as yet no one has taken the work in hand.

There have been published '*El Orbe Pintoresco Daguerreotipico*,' '*La Geografia Pintoresca*,' third edition; with steel engravings, plans, and maps, which represent the principal cities of the world according to Balbi, Malte Brun, and Miñano; Nos. 1, 2, and 3 de la '*Costa Occidental de Francia*,' the last number, including that part between the Olonne Sands and the high road to Seim, by the Hydrographic Society.

Don José d'Urcullu, to whom we are indebted for this notice of what is doing in Spain, further informs us that there will be immediately published the '*Elementos de Geografia*,' by Letron.

There have also appeared an elementary geography for children, by D. L. Garcia Sauz, and a Treatise on Geography, by D. N. Rodriguez Solano, in Salamanca.

With regard to maps and charts, there has appeared a chart of the Western Coast of Sumatra, with the Island of Engaño, &c.; also

A Chart of the China Sea, with the Islands of Anambas.

D. Domingo Fontan has nearly finished a Topographical Map of Galicia, ordered by the Government in 1834.

The unsettled state of Spain has been most unfavourable to science; and no surveys, either land or maritime, have been even projected. Nor has any impulse been given to the study of geography, unless it be that several preparatory schools have been established in different cities, and at these geography forms part of the studies of the pupils.

*Portugal*.—I have much pleasure in announcing that about five years ago a Society was formed in Lisbon, under the designation of the '*Royal Maritime and Colonial Association of Lisbon*,' which has already published several volumes of interesting matter, on the voyages and colonial establishments, both early and late, of the Portuguese, in the work entitled '*Annaes Maritimas e Coloniaes*.' It is to be regretted we are not yet in possession of this mine of information respecting the early establishments of the adventurous Portuguese, and where no doubt we should find much valuable information on countries which most particularly interest us at this moment, more especially the E. coast of Africa.

From our corresponding member, Commander Maçedo, we learn that the Topographical Map of Portugal is in progress.

M. de Maçedo has himself published a memoir, to prove that the Canary Islands were not known to the Arabs previous to the discoveries of the Portuguese. Councillor Lopez de Lima has published the first

volume of his Statistical Essay on the Portuguese possessions in Western and Eastern Africa, in Eastern Asia, in China and the South Seas. This work is published by order of the Government; and the present volume relates to the Cape Verd Islands and its dependencies. The Royal Academy of Sciences of Lisbon continue the printing of 'Information relating to the Molucca Islands,' by Gabriel Rebillo, forming part of the series entitled, Materials for the Geographical History of the Countries beyond Sea, &c.

The same Academy is also publishing the second volume of the reprint of the Collection of Opuscula relating to the Navigation, Conquests, and Voyages of the Portuguese. This volume contains the History of 'What Don Christovao da Gama did in the Kingdoms of Prestre John with 400 Portuguese,' by Miguel Cassauhóp.

*Holland.*—We learn that M. Van der Velde, of the Royal Dutch Navy, is about to publish a work on the Dutch possessions in the East, with a large map. The same individual, in conjunction with M. V. de Coppenaal, has undertaken a French translation, and complete revision of the important work of François Valentyn on the East Indies, published in five folio volumes at Dordrecht and Amsterdam in 1726. This has ever been considered by those to whom the Dutch language was familiar, as a most important work; and when, as is proposed in the new edition, all that in the lapse of one hundred and nineteen years has become obsolete shall be eliminated, and all that later researches have corrected or brought to light, be substituted in its place, this will unquestionably be one of the most important works of the day, and its appearance will be hailed by all lovers of oriental geography as a most valuable acquisition.

*Italy.*—The progress of the study of geography, and its sister sciences geology and chorography, will be greatly promoted in Italy, if sufficient encouragement secures the continuation of an excellent periodical, commenced last year at Bologna by one of our corresponding members, Signor Annibale Ranuzzi. His Geographical Annual ('Annuario Geografico Italiano'), a small and unpretending volume, not only gives a complete account of what has been lately done in Italy, to improve our knowledge of geography, but contains valuable communications from the most distinguished men in that country on the geology, topography, climate, produce, and industry of their native country, with statistical tables carefully compiled, and a complete catalogue of scientific works lately published in the various Italian States. A learned dissertation by Count Gräberg de Hemsö, another of our valuable correspondents, on the early Genoese navigators, will be read with much satisfaction by all who take an interest in the history of navigation and commerce; but

perhaps the most important communication in the volume is a letter from General Visconti, in which he explains the origin of a discrepancy in the height of the dome of St. Peter's at Rome, as given by the estimates formed by the astronomers of that city, and the determination made by Captain Fergola of the Royal Neapolitan Engineers. That officer, not being able to extend his triangulation into the Roman territory, and wishing to make the dome of St. Peter's the termination of one of his angles, was obliged to assume a co-efficient of terrestrial refraction. Not considering the variation of that element in different climates and seasons, he took as its expression 0.08, the quantity generally used in the French triangulations, and given by Puissant in his treatise on geology, found also by actual observation to be applicable in the immediate neighbourhood of Naples. The height of the dome of St. Peter's thence deduced differed materially from that of the Roman astronomers, whose accuracy could not be doubted. This error was pointed out by Colonel Corabœuf of the French Engineers, in the '*Bulletin de la Société de Géographie.*' General Visconti, therefore, caused a fresh calculation to be made along the whole chain of triangles from the Adriatic to the Mediterranean; and thus obtained for the expression in question 0.06415, an amount which, when applied to the determination of the altitude of the dome of St. Peter's at Rome, gives a result nearly identical with that of the Roman astronomers. Though this correction was communicated without delay to M. Corabœuf, it appears to have been as yet unnoticed in France.

There are also several other valuable communications from General Visconti in Signor Ranuzzi's '*Annuario*;' and much as might have been expected from the known zeal and ability of that writer, it may safely be averred that his work exceeds even the expectations which his reputation led his readers to form.

To this I must add, that Signor Ranuzzi, who is one of our best correspondents, has just favoured us with the following interesting information. Among the works which appeared last year, says the Count, one is especially deserving of notice; the volume published at Milan, in consequence of the congress of men of science, and entitled '*Natural and Civil Reports on Lombardy*' (*Notizie Naturali e Civili sulla Lombardia*), published by a society of learned men, under the direction of Signor Carlo Cattaneo. This work, of which the first volume only has yet been published, and which will be followed by Appendices and Supplements, according as more materials are received, will give a full and complete orographical view of Lombardy. At Florence Signor Bianchi has begun to publish a Political, and Signor Marmochi a Physical, Geography of Italy, under the title of '*Introduction to the*

Natural History of Italy, General and Comparative' (Prodomo della Storia Naturale, generale e comparativa, d' Italia.) These two works will be very well executed, and are calculated to extend the knowledge and taste for these sciences among the Italians. They form part of a collection entitled 'The Italian's Library.' Many works of merit were undertaken and continued in the course of last year. Signor Rapetti has gone on with his 'Geographical, Physical, and Astronomical Dictionary of Tuscany,' a work conducted with great care and knowledge. In the Sardinian States Signor Casalis has, in like manner, advanced in his Geographical, Historical, Statistical, and Commercial Dictionary of those States; Signor Dho, the Statistical and Historical Chorography of the same; Signor de Bartholomei's 'The Topographical and Statistical Notices of the Sardinian States,' three works of great value, which throw a strong light upon one of the principal Italian States. 'The Physical, Historical, and Statistical Chorography of Italy,' published at Florence by Signor Zuccagni Orlandini, may be said to be now completed. It is a work of vast extent, which cost its meritorious author much care and indefatigable labour; but is, notwithstanding, far from satisfying all that is required by the actual state of knowledge. He collects a multitude of facts, hints, and observations, but not always exactly and correctly; and he errs especially with respect to order and method. This is what may be said by one who would criticise his work; it will, however, remain a fine monument of the geographical labours of Zuccagni, to whom, says the Count, we were previously indebted for his excellent Atlas of Tuscany; and it will operate as a stimulus to the more careful study of our country (Italy). Signor Marmochi has lately completed his course of 'Universal Geography,' in 6 vols. 8vo.—the most important work on General Geography undertaken in Italy in these latter times. At Naples the Bureau Topographique has published a new chart of the Mediterranean in 3 sheets; and Signor de Luca is superintending the 4th edition of his Geographical Institutes; but Count Ranuzzi does not know whether they have yet been published. It is a good elementary book, of which the 3rd edition was published in 1843. At Turin a translation has appeared of Balbi's 'Elements of General Geography,' published at Paris in 1843; and a sort of summary of his other work, entitled 'A Compendium of Geography.' These works have for many readers the merit of being written by Signor Balbi, a writer who adopts the French, that is, an easy and popular style, but improves it by arrangement, depth, and real knowledge. However, it is well to know that, since the great progress recently made in geography, and since the extraordinary labours of Ritter, Humboldt, Berghaus, &c., have become known, the authority and celebrity of Signor Balbi have

been greatly diminished in Italy, particularly in Lombardy. He will nevertheless always be esteemed one of the distinguished Italian geographers, and an indefatigable, if not a very accurate compiler.

The Topographical Office at Naples has published the sixth Sheet of the great map of the Kingdom of the Two Sicilies, under the direction of the indefatigable General Visconti. Of the geodetical and topographical labours now carrying on in Piedmont and the Sardinian territories generally, we can say nothing, as these labours are kept secret.

At Milan Signor Civelli has undertaken a large map of Italy in 28 sheets, on the scale of  $\frac{1}{353,553}$ ; 16 sheets of it have already appeared; and Signor Litta has published, as a specimen of a Topographical and Historical Atlas of History, the beautiful 'Historical Tableau of Pavia,' a work for which its illustrious author has already collected a vast quantity of materials, and he has combined together all the materials which were necessary for the great 'Map of Italy and its Confines,' at which he has been working for many years. The last publications at Milan were the maps of Signor Brenna, entitled 'Chorographical Maps of the Province of Milan;' they are a perfect model of accuracy and diligence, and will be considered among the most beautiful maps constructed in Italy; they are on a scale of  $\frac{1}{23,000}$ . At Venice, Signor Botta has published a new Post and Road Map of all Italy, in one sheet. At Turin a new Universal Atlas has been published by Signor Casella, in 16 sheets, very well executed and very useful to students of geography; it is perhaps the best atlas lately constructed in Italy, and supplies one of the requisites most needed in geographical instruction.

Signor Marmochi's Course of Geography already mentioned is accompanied by an atlas; but we cannot say much for its execution. The Chorography of Signor Zuccagni Orlandini is also accompanied by an atlas and a large general map of Italy, in 15 sheets, on a scale of  $\frac{1}{200,000}$ ; but it is not a very correct work.

At the Scientific Congress held at Milan in September last, General Vacana proposed the adoption of a uniform method of colouring geological maps, recommending that adopted by the German geologists, which Signor Giuli has followed in his useful Mineralogical Map of Tuscany.

Vice-Admiral Albini has published an excellent Sailing Directory for Sardinia. Professor Gallo of Trieste has also published his sixth 'Nautical Almanack,' a very useful and well-executed work, as we are informed.

The Milanese have founded a Chorographical Institution for the collection of information, civil and natural, respecting Lombardy. Signor

Ranuzzi has founded a similar institution for Æmilia, *i. e.* all the region S. of the Po, from Piacenza to Rimini; and at Genoa the Marchese Pallavicini has taken steps for establishing one for Liguria; so that, as Signor Ranuzzi observes, when every natural region of Italy shall have followed the example set them by the Lombards, Italy may hope to possess a uniform geographical work, comprehending the whole of the Peninsula, and the adjoining countries.

In addition to the above, we have been favoured by our distinguished Honorary Member, Count Gräberg of Hemsö, with an account of the progress of geographical labours in Italy. He has himself very properly exposed, at the last Scientific Meeting in that country, the great inconvenience of having no less than fourteen different Italian miles, all of which he very judiciously proposes to reduce to one, *i. e.* to the geographical mile of 60 to a degree.

The Milanese Professor of Astronomy, F. Carlini, has published a most interesting paper on the measure of that section of the meridian which, traversing the plain of Lombardy, is terminated by the parallels of Zurich and Geneva.

At Milan the ingenious Captain Joseph Brupacher has terminated, and is about to place in the hands of the engraver, a most beautiful Hypsometrical Map of the Alps and of the greatest part of the Apennines, with the indications of their corresponding passes, in 3 large sheets, on the scale of  $\frac{1}{800,000}$ .

Professor Vesin has just published a 'Quadro sinottica-statistico del Granducato di Toscana.'

Lastly, Signor Gaetano Osculati, of Milan, already known as the author of a very interesting narrative of his travels in South America, inserted in the 'Politecnico,' has published at Monza, '*Note d'un Viaggio nella Persia e nelle Indie Orientali negli anni 1841 e 1842.*'

*Naples.*—On the subject of the Geodetic and Topographical works executed by the Royal Topographical Office at Naples, from May 1844 to the end of April of the present year, our zealous Honorary Member General Visconti gives us the following information:—

Signor Marieni, the Austrian engineer, completed in 1844 the whole triangulation of the first order, in Tuscany and the Papal States, connecting it on the N. with that made in Upper Italy, and on the S. with that of the Two Sicilies towards the Roman frontiers. They are now calculating at Vienna all the triangles measured by Marieni; and, in the two sides of the triangulations on the Neapolitan frontier, which have been already calculated, the agreement between the points common to each is as follows:—

Length of the side between Mount Petrella and Mount Serracommune,

beginning from the base, measured in Upper Italy and continuing through Tuscany, 51496·72 metres.

The same distance, according to the calculations made in the Topographical Office at Naples, beginning from the base of the Castel Volturmo, 51496·52 metres. Difference, 0·20 metres.

Length of the side between Mount Petrella and Mount Viglio, beginning as before from the base in Upper Italy, 67047·13.

The same distance from the base of Castel Volturmo, 67047·85. Difference, 0·28.

Differences of so very small an amount in such long distances are certainly wonderful, and for that reason are perhaps to be ascribed to some favourable combinations. It is, however, no less true, that they show a very great agreement between the Austrian and Neapolitan triangulations, and the great accuracy with which they have been carried on by the respective engineers.

Geodetic operations have been undertaken in order to obtain the measure of an arc of the meridian of about  $5\frac{1}{2}^{\circ}$  between Termoli, a city on the shore of the Adriatic, and Cape Passaro, the southernmost point of Sicily.

The northern part of this chain of triangles, passing between Termoli and the Basilicata, is almost terminated; but in the remaining part, as far as Cape Passaro, many difficulties have occurred on account of the height of the Apennines in Calabria, and of the position and magnitude of Etna. In several cases, when one station has been supposed to be visible from another, it was found upon the spot that nothing could be seen; so that much time was necessarily lost in the examination of the country, and the selection of the proper stations for the southern part of the triangulation. Such an operation has, however, been completed, and nothing now remains to be done except taking the angles with the repeating-circle at each station, which will be completed within the present year (1845). Malta will also be connected with Sicily by means of one large triangle.

In the course of the Geodetic examination of the above-mentioned country, a site was fixed upon in the plain of Catania for the measurement of a second geodetic base in 1846, to be connected with the triangulation along the meridian of Termoli.

The triangulations of the 2nd and 3rd Order have been continued through the provinces of Terra di Lavoro, Abruzzi, Molise (Sannio), and the Capitanata, in order to supply trigonometrical points to the engineers, who are laying down the country on a scale of  $\frac{1}{250,000}$ .

Colonel Skribanek of Vienna has proposed to me, says General



Visconti, to make a triangulation across the Adriatic, in order to connect the triangulation of Dalmatia with that of the kingdom of Naples. The General thinks it very possible to effect this operation by the three following triangles:—1st, The Isles of St. Andrea, Cazza, and Pelagosa; 2ndly, St. Andrea, Pelagosa, and Tremiti; 3rdly, Tremiti, Pelagosa, and Monte Calvo, which is the highest peak of Mount Gargano in Puglia (Apulia). S. Andrea and Cazza are points in the Dalmatian triangulation; and Tremiti with Monte Calvo are trigonometrical points of the Neapolitan Survey. General Visconti is now concerting measures with Colonel Skribanek for the execution of this interesting operation in 1846.

When this is completed, the measure of an arc of about  $13^{\circ}$  on the meridian of Vienna will be obtained between Silesia and Cape Spartivento, the southernmost point of Italy.

The whole of the Topographical Map of the Faro of Messina, on a scale of  $\frac{1}{100,000}$ , is completely finished. Preparations for engraving and publishing it will now be made, on a smaller scale, but such as will be very serviceable to navigators, and for the various purposes for which the Government is desirous of using it.

The Topographical Survey of the great Military Map of the Kingdom of Naples, on a scale of  $\frac{1}{200,000}$ , is still in progress. At present little is wanting to complete the topography of the extensive province of Terra di Lavoro.

The engraving of the three last sheets of the great Topographical Map of the country round Naples, on a scale of  $\frac{1}{25,000}$ , is so far advanced, that it is expected to be finished before the end of the present year.

Great progress has also been made in three more sheets of the Topographical and Military Map of the Kingdom (Naples), on a scale of  $\frac{1}{40,000}$ ; one of these three sheets will be finished and published in the course of the present year.

The engraving of the Nautical Chart of the Mediterranean in three large sheets, with special plans of the principal ports, is almost finished. It will be published in the course of the present year. The works in engraving or lithography for the plans of the principal ports, &c., for the use of the Neapolitan Navy, are in a state of progress.

*Prussia, and her advances in geography.*—Whilst during the two last years the gold Medals of our gracious Patron have been awarded to Adolph Erman and Carl Ritter; the former one of the most scientific explorers of the age, the latter, as I have already said, the great historian and philosopher of geography—whilst our own Sovereign has been prompt in honouring the brilliant researches of another Prussian subject,

also one of our Medallists, Sir Robert Schomburgk, whose meritorious labours are recorded in our Journal, our illustrious foreign member, Alexander von Humboldt, has just presented to his countrymen the first part of his '*Kosmos*,' the crowning glory of his long and splendid career. Having received the volume only when this address was well nigh completed, it is impossible for me to attempt to analyze its merits, still less to render justice to the boldness of conception, the power of research and combination, or to the breadth and grasp of thought, with which the great traveller of the age has commenced his gigantic effort. That effort, to use his own words, embodies "the hitherto indefinitely conceived notion of a complete physical geography, which has extended with its contemplation, and has resolved itself into a plan perhaps too daring; it includes within its wide grasp a general view of all created things, a complete physical description of the universe." In alluding to this work as the embodying of ideas and images, which have been floating in his mind for more than half a century, he adds, with the modesty which sits so gracefully on the true philosopher, that he now offers to his contemporaries this sketch of the great constitution of nature with hesitation, alarmed lest he has taken falsely the measure of his own faculties, and of his ability to do justice to his vast subject. There is, however, no man living, whose generalizations from observed phenomena can have so great authority as those of the universal Humboldt. He has traversed a greater portion of the earth's surface than any other scientific traveller; and not merely examining the surface of the globe, he has penetrated into its deepest recesses, and has brought into comparison the high table-lands and lofty mountains of tropical America with the desert steppes and hills of northern Asia. At present, we have only before us that part of his great plan, which includes an account of the limits and scientific treatment of physical cosmography, and a general view of the phenomena of the universe, preceded by a dissertation explaining the varied interests excited by the study of nature, and the fundamental laws by which she is governed. In two volumes, which are to succeed, will be described the inducements that exist to the study of nature, the detailed history of natural phenomena, exemplified in the gradual development of the plan of the universe as a whole; and lastly, an account of some particular phenomena, previously considered only with reference to the general argument. Some of the introductory observations in the first volume are already known to the German public, having been delivered in an opening address some years ago at Berlin. They contain also an eloquent and instructive recommendation to the study of physical geography in its highest sense, and in its relations to natural history. The concluding

observations in this chapter, as they bear on the general object of the work, as far as relates to our own department of science, are for us therefore especially interesting.

“Physical geography,” we are told, “naturally tends to, and involves a consideration of the phenomena of the whole material universe, and by no means consists of a mere cyclopædial abridgment of the more important facts and results of observation, a knowledge of which may be obtained from works on natural history and physical science. Such mere results are only so far valuable, as they bear upon the great question of the mutual and harmonious working of those different laws throughout the universe, all of which tend to produce and preserve the existing condition of things.”

I cannot pretend to give here at any length an account of the various subjects discussed in this volume, including geology, on which in another place I might dilate; but I may venture to say that, as geographers, you will find in it much that is deeply interesting and valuable, exhibited in a form that renders it easily available, concerning the subject of temperature, and its relation to the present extension of plants and animals. You will also find the philosophical principles, and the great final object of our science, exemplified and illustrated in the happiest manner, with a profusion of facts bearing on the subject.

I will close these observations with one more short quotation from the conclusion of the volume. As a kind of *résumé* of his account of the actual phenomena of existing nature, Baron Humboldt (and I know you will thank me for attempting to be the first to place his words before you in an English dress) thus concludes:—

“From the contemplation of the distant nebulæ, and the systems of double stars mutually revolving round one another, we have descended to the consideration of the minute and infinitesimal examples of organic life inhabiting both the sea and land, and the vegetation which clothes the naked rocky cliffs on the declivity of the snow-capped mountain. All these phenomena may have been produced by the operation of laws, concerning whose nature and mode of action we can attain some knowledge. Other laws however there are, which are less manifest, but whose effect is seen in the highest realms of organic existence, in productions varied in form, and indicating so much creative power exhibited in the faculty of speech, and exemplified in the language of the different races of men. A physical delineation of nature conducts us to the verge of a higher intellectual sphere, whence we have as it were glimpses into another state of existence. It, however, only points to the boundary, and ventures not to advance a single step beyond.”

Passing from the grand subject of Humboldt's 'Kosmos,' of which you will soon have a complete English translation from the pen of an accomplished lady, already well known to you by her successful version of the interesting travels of Von Wrangel, I will proceed by calling your attention to the deep interest, with which our science is regarded and cultivated in Prussia. Our sister Society in Berlin has so rapidly risen in public estimation, that an eye-witness to one of their recent monthly meetings informs me that, among two or three hundred individuals present, were members of the Royal Family, as well as many distinguished military and other public functionaries. Princes of that illustrious Royal Family are, indeed, foremost among the explorers of distant lands. Prince Adelbert, a nephew of his Majesty, in visiting Brazil, has extended his researches to the river Xingu, which, rising in the province of Matte Grosso, falls into the great Amazon near Villarinho, under the 2° of S. lat. and the 52° of lon. W. of Greenwich. Accompanied by two Prussian noblemen, Prince Adelbert has ascended the Xingu to a higher point than any previous traveller; so that, with his Royal Highness's accomplishments, we may look for some valuable additions to geographical knowledge from the publication of his Journal, which is now printing for private distribution. Another nephew of the King, Prince Waldeemar, having visited Ceylon, is now journeying through Nepaul, having received from the British authorities in Bengal and elsewhere, every attention that is due to his high station. And here I must say, that not Prussia only, but other countries of Germany are distinguished by the explorations of their princes; for it is well known to you that in previous years Prince Maximilian of Neuwied, Prince Bernhard of Weimar, and Prince Paul Wilhelm of Württemberg, have enriched geography, ethnography, and botany by their several contributions. Nay more, have we not seen amongst us, and participating in the meetings of our men of science, the Kings of Prussia and Saxony, when they recently visited our beloved Sovereign?

In a rapid sketch like this I can now only glance at the efforts which have been made in Germany, and especially in Prussia, to add to our stores of foreign travel. Knowing the intense interest with which his Prussian Majesty viewed the whole progress of our recent warfare in Afghanistan, and how well he judged in sending thither that scientific soldier Major Baron von Orlich. I am most happy to see that the travels of this able envoy have been translated into English. Again, it will be observed that Dr. Schmitz has consigned to us some valuable information respecting Sumatra, whilst Professor Schoenbrunn has passed through the southern portion of Asia Minor, and M. T. Phillippi

the tracts around Tenasserim. But of all the journeys which have recently emanated from the liberal encouragement of the Prussian Government, the researches of Professor Lepsius in Egypt and Nubia, which are now in progress, most particularly merit your attention, because it is quite certain that this distinguished leader and his well-chosen associates will return richly laden with antiquarian treasures, descriptions, and drawings culled from these regions so famous in the early history of mankind. To this point I can indeed say a few words, from personal insight into the nature of that expedition; since from the privilege granted to me by the King of Prussia, when returning from my last excursion to the N. of Europe, I met at his Majesty's table the chief artist of Dr. Lepsius's party, whose state of health had compelled him to return, and whose drawings were no sooner inspected than purchased by that enlightened royal patron of the Arts. I may add, that Professor Lepsius, judging from the much greater perfection of the architecture and monuments in Lower than in Upper Egypt and Nubia, has satisfied himself that civilization did not descend from those high countries, but, on the contrary, was extended thither from the rich and low regions of the Nile.

Other researches of considerable interest are those planned by Professor Koch, and approved by the King, which have been carried out amid the most slightly known districts to the South of the Black Sea. From his admirable account of Asia Minor, it will be recollected that our own associate, and medallist, Mr. W. J. Hamilton, was unable to penetrate into that portion of Pontus between Trebisonde and Colchis, inhabited by the lawless races called Hemshis and Lazes. This has been accomplished by Dr. Koch, who, a skilful botanist himself, and making use of his medical knowledge to ensure protection from the savage natives, was accompanied by an excellent linguist, Mr. George Rosen; and thus we may hope (Dr. Koch having returned to Berlin) that his excursion will lay open to us the peculiar dialects, as well as the natural productions of these wild and hitherto unexamined tracts.

Again I must call your attention to further developments of the former researches of your distinguished foreign member and medallist, Adolf Erman. In announcing to you with pleasure, that the excellent work, 'Reise um die Erde,' which I previously eulogized with all sincerity, is about to appear in English, I must not lose the opportunity of stating, that the very last communication M. Erman sent to us is one of very great importance. In perusing his Essay on the tides of the Kamshatkan and Okhotskan coasts, founded partly on his own observations, and partly on preceding data, you will perceive that the Sea of Okhotsk (to

which I shall presently allude in speaking of the Russian traveller Middendorff\*) possesses the same anomalous tides as those for which the Bay of Tonquin has been celebrated since the publication of the 'Principia' of Newton; such anomalies being now brought to very fair accordance with the theory of the tides advocated by La Place, and successfully developed by Lubbock, Whewell, and Airy in our own country.

Among the Prussian contributions to geographical knowledge in the course of the past year, the new edition of Strabo, published at Berlin by M. Gustavus Kramer, is well worthy of notice. The defects and obscurities of the text of that excellent writer have long been a subject of complaint with all students in ancient geography; and notwithstanding the resources supplied by the French libraries, the translation made by order of the Emperor Napoleon disappointed the expectations of the learned world. Unhappily, M. Dutheil was far from equal to the task assigned to him, and M. Letronne, though one of his assistants, was then too young and inexperienced to remedy the evil arising from his leader's want of knowledge. In this also, as in many of the literary undertakings set on foot by Napoleon's orders, celerity was too much insisted upon. Strange, therefore, as it may seem, no really critical edition of Strabo appeared before the publication of M. Kramer's volume. None of the preceding editors had opportunities of examining the best MSS. themselves, and ascertaining where marginal notes had crept into the text; and what was of more consequence, where whole lines had been left out, because two successive lines ended in the same word. Much, indeed, had been done by the acuteness and diligence of Casaubon, Tyrwhit, and Tzschucke; but a larger portion of doubtful text still remained untouched, though evidently either unintelligible, or such as Strabo could not have written.

Unhappily the text of this author was greatly corrupted, as early as the twelfth century, as appears from the quotations furnished by Eustathius in his 'Commentary on Homer.' It is no wonder, then, if our most ancient MSS., though two hundred years older than Eustathius, are far from perfect. But by a careful comparison of the best copies, and attention to the corrections and additions made by the early possessors of them, M. Kramer has been enabled to restore many mutilated passages; and when better authority failed, to correct, by happy conjecture, a large number of palpable mistranscriptions. He was enabled to effect

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\* In an excellent periodical, conducted by M. A. Erman, 'Archiv für Russland,' which is, I regret to say, little known in England, he has recently given a sketch of Northern Asia, with an account of the discoveries of Russian and other travellers in that region.—(See Volume for 1843.)

this great work by the liberality of the Prussian Government, at whose charge he spent several years in France and Italy, diligently employed in examining all the MSS. of his author preserved in their public libraries, and carefully collecting such as, from their accuracy or antiquity, deserved peculiar attention. His first volume, containing the first six books, about one-third of the whole work, was printed in the course of last year, and every one interested in ancient geography will look with impatience for the remaining volumes. It is to be hoped that he will add a Latin translation, as the best commentary on his text, and also for the use of those geographers who do not understand Greek. It may be useful to add, that M. Grosskurd, the learned translator of Strabo into German, has published, as a separate volume, a complete index to all the editions of that writer—an aid the more needed, as Tzschucke's edition was never completed, and has no index of names or things.

If from the works of Strabo, and from Europe and Asia, we turn to America, there we find that M. Bellerman, a Prussian artist of merit, employed at the expense of his sovereign, is travelling through Columbia, and has already transmitted to his country characteristic sketches of that picturesque land. Nor is this royal munificence confined to Prussia proper; for at this moment the eminent naturalist Professor Agassiz, a native of Neuchâtel, has been furnished with means to explore during two years the geology and natural productions of the United States, and the countries of the far west. Wherever, indeed, we cast our eyes, we see the same royal finger; and as an old officer of the British Association for the Advancement of Science, I am gratified in being able to say, that Professor Dové, an eminent magnetician, will, through the bounty of the same monarch, be enabled to attend the ensuing meeting at Cambridge, there to join our own Sabine and men of other nations, in comparing the results already obtained. He will claim on that auspicious occasion the continuation of those important operations; the loftiest objects which geography contemplates. Justly, therefore, Gentlemen, have we cause to look with admiration on that powerful kingdom (one of our most natural and oldest allies), which, though devoid of a single oceanic port, and lying in the centre of Europe, is thus urged forward by its Sovereign to pry into the remotest lands, not from the stimulus of lucre or the hope of conquest, but from a pure love of knowledge, and with the wish to elevate the character of his nation.

Well may Prussia stand erect in this peaceful age for leading the way in the diffusion of that geographical knowledge for which we are specially united; and rightly may we augur future success to her efforts, when we know that Alexander von Humboldt is the bosom friend, Leopold von

Buch a chamberlain, and the Chevalier Bunsen the representative in England, of her enlightened and benevolent monarch.

*Works and Maps published in different parts of Germany.*—Regretting that my imperfect acquaintance with the geographical progress recently made in other territories in Germany prevents my doing justice to the subject, I may however mention, that Russeger's 'Memoir on the course of the Bahr-el-Abiad, and on the so-called Mountains of the Moon,' as well as the Map of Nubia, executed under his directions at the Military Geographical Institute of Vienna, are most valuable accessions. Hopes are further entertained that Seetzen's Manuscripts and Journals of his travels through various parts of Asiatic Turkey in 1802–1809 will shortly be published; and it is anticipated that they may prove equal in interest to the narratives of Burckhardt and Carsten Niebuhr.

In respect to new German Maps, the list would be indeed too copious, were I to attempt to enumerate them. At the head of those for their important bearing on British colonization and its limits in Asia, are the labours of Zimmerman, particularly those which relate to Affghanistan, and the more northern regions watered by the Upper Oxus. Then come the Maps of Asia Minor by Kiepert, and the same author's great Atlas of Hellas and the Hellenic Colonies, in which M. Carl Ritter takes so much interest. In addition to numerous works which are constantly issuing from the establishments of Berghaus of Berlin, including the beautiful little Map of the Great Canary, derived from the labours of Leopold von Buch, and exhibited at our last meeting, an Atlas of China, by Professor Endlicher, of Vienna, is about to appear. From the great reputation of Professor Endlicher as a botanist and Chinese scholar, we may presume that his development of the observations and reports of the Jesuit missionaries will be highly instructive; and with the addition of our own recent surveys of her coasts and harbours, and the Russian exploration of her mountainous northern frontiers to which I have alluded, China will, I trust, be not much longer the great "terra incognita" of the civilized portions of the globe.

Lastly, in respect to Germany, I have pleasure in bringing to your notice, that the different topographical and trigonometrical surveys of the various states of the empire, conducted on the same plan, or nearly so, as in our own country, are in full activity; and that among those recently published, the Map of the Westphalian and Rhenish Provinces, constructed by the Prussian military staff, and the Maps of the Kingdom of Hanover, prepared and published under the authority of that Government by Lieutenant Pape, are highly worthy of commendation, for their fidelity and the beauty of their execution.



## RUSSIA IN EUROPE AND ASIA.

*Our new Foreign Members, Baer, Helmersen, and Dubois de Montpereux.*—In again calling your attention to the progress of our science in the Russian empire, I have sincere pleasure in congratulating you on the selection of two of its distinguished geographers and explorers, to occupy vacant places in your list of foreign honorary members. M. Baer and Colonel Helmersen, both of them members of the Imperial Academy of Sciences of St. Petersburg, are men whose distant researches alone would entitle them to the honour you have conferred on them, and who, to those claims, have added others of not less weight in those philosophical views, with which they have enriched their descriptions of the natural history of remote lands, and the manner in which they have for some years conducted a most useful and praiseworthy work, in which materials of fresh geographical knowledge are grouped together, that would otherwise have been lost to science ('*Beiträge zur Kenntniss des Russischen Reiches*').

The work of M. Baer on the Kirghis Steppes is replete with the most curious information, respecting the wild nomadic inhabitants, who occupy extensive tracts along the south-eastern boundaries of the empire; whilst the data concerning the extreme nature of their climate, and of Northern Siberia, are so well handled, as to have elicited from Humboldt himself the highest praise for their bearing on meteorology. This great geographer, without M. Baer's explorations of Nova Zemlia, would have been unable to give that general view of the great meridian chain of the Ural mountains, with which he has enriched his '*Asie Centrale*.' The same work of our new honorary member has indeed enabled geologists to see in the promontories of those large islands of the glacial ocean, the true physical northern prolongation of the Ural mountains.

To Colonel Helmersen we are not only indebted for graphic descriptions of the Ural and Altai mountains, and comparisons between them and the hilly regions of other countries, but also for many barometrical determinations of heights, accompanied by close and faithful mineralogical descriptions of very distant regions. Whether we look to the routes he followed, in some of the wildest portions of the Altai, and his picture of the natural features, inhabitants, and structure of the country around the great Telezkish lake in the Eastern Altai, and of its inhabitants the Teleuts, or to his notes on the Kirghis Steppes as compared with the Ural, or to the great value of his geological labours in various parts of Russia, as well as in Siberia, which occupy such large portions of the volumes of the Imperial School of Mines, I feel confident that no one could have more thoroughly merited your suffrage; and as,

amidst the many kind friends I have met with in Russia, I especially felt the value of the assistance rendered to me by this “*par nobile fratrum*,” Messrs. Helmersen and Baer, so do I particularly rejoice to see them now linked on in so intimate a manner to the Royal Geographical Society.

I must here further seize the opportunity of saying how much I have been gratified by your nomination of **M. Dubois de Montpereux** to the third vacant place of honorary member; because, though a Swiss by birth, and now resident in his native country, Neuchâtel, he is chiefly known to us and to Europe by his great monumental work upon the Caucasus. Of that work I have already endeavoured to speak in the terms which it merits, in an anniversary discourse addressed to the Geological Society of London, but it is now specially my duty to advert to its bearing on our own pursuits. In truth, M. Dubois’ labours cannot be sufficiently appreciated, except by those who, taking the largest and most comprehensive view of our science, delight to regard it as embracing many kindred branches of knowledge, and as comprising, with a true delineation of the physical features of the earth, the structure of the soil, the modifications of the surface, the history of its inhabitants, and its natural productions. From its diversified and bold features, and its precious historical records, no region seemed to have a greater claim on geographical explorers than the Caucasus; and yet, notwithstanding the many travellers who have passed over it, by one line of route or other, from the thirteenth to the present century, no one had so threaded these mountains, and examined their escarpments and defiles, and had so compared them with the accounts of ancient historians, as to make us really familiar with them, until M. Dubois presented to the public the results of his arduous labours. And then in what form do they appear? Not as a dry record of places visited, and of rocks examined, but as a perfect history, as well of each tract, from its earliest geological condition, through all its successive mutations, as of the various races of men by which it has been inhabited during the present era. Such, Gentlemen, is geography in the grandest and most comprehensive sense of the term; and as I am not acquainted with any production of modern times, which more successfully connects the early records of nature with those of the human race, or which more elaborately works out effects to their true causes, so I congratulate you in having the name of Dubois de Montpereux added to your list of distinguished foreign members. This author is, indeed, the more worthy of your special notice, as he accomplished these durable results under circumstances of peculiar difficulty, in a country beset with plague and war, and with no other pecuniary means than those of a slender private fortune, with which, and his own perseverance, he overcame all obstacles, and has put before

the world five volumes, and a splendid atlas, illustrative of the Caucasus and the Crimea, which might do honour to the efforts of any European Government.

*Geographical Surveys of Russia—Great Operations of M. Struve and General Tenner.*—Whilst, through the exertions of her present enlightened Emperor, the interior of Russia in Europe is undergoing vast improvements—among which the great railroad connecting St. Petersburg and Moscow, and the splendid bridge, on massive granite piers, over the rapid Neva (an effort from which all preceding sovereigns have shrunk), are the most striking, the frontiers of that vast empire are everywhere being surveyed by competent geographers. Even along the central portion of the wild and rugged boundary line, between Siberia and China, surveys, conducted by Colonel Silvehjelm, have produced most detailed and elaborate maps of regions, hitherto only approached at rare intervals by casual travellers. Honoured with the confidence of the Imperial Government, I have recently had the privilege of inspecting these splendid results, and in viewing in detail the physical features of the mountainous tracts, which lie around the great lakes, or interior seas of Balkhat-Danghize and Novr Saissar—names scarcely known to geographers, but which enrich the archives of the imperial état-major. But, apart from these field-surveys, the scientific power of Russia is employed, under the direction of that eminent astronomer and mathematician, Struve, in realizing one of the most arduous enterprises of modern times—to measure an arc of the earth's meridian along her whole western or European frontier, which, when completed, will be the most extensive operation ever yet executed by any government. Commenced by M. Struve in 1820, the progress of this work was reported on by him in 1830, in reference to his own geodesical operations between the river Dūna and the isle of Hochland; and afterwards tracing the results of the geodesical measurements of General Tenner from the Dūna southwards to Belin, in the government of Grodno. Subsequently the works were extended northwards to Finland; and it is only during the last summer that a line of uninterrupted triangles has joined the isle of Hochland with the city of Torneo, and thus united the imperial operation in Russia and Finland with that executed by the Swedish Government in the beginning of the present century. Seeing that such great progress had already been made, General de Berg, when he recently entered on the duties of quarter-master-general of the Imperial staff, called attention to the great importance of extending this meridian further southwards to Bessarabia and the Black Sea, and suggested that M. Struve should unite with General Tenner for that object.

The Emperor having fully approved of the reports and recommendations of M. Struve, this additional mensuration is in full progress, and 50 new triangulations have been added to 183 which had been formerly made, embracing already an arc of  $19^{\circ} 15'$ , and which, when carried into Bessarabia, will range over  $21^{\circ} 48'$ .

When we recollect that our own triangulation in the East Indies extended over  $15^{\circ} 58'$ , and that of the French, from Dunkirk to the Balearic Isles, over  $12^{\circ} 23'$  of latitude, we at once see, that the operation described by M. Struve greatly exceeds them in extent; whilst, owing to the vast mass of land possessed by the Russians, it will eventually be the greatest which *can* ever be executed on the earth's surface, particularly if the Swedish Government, encouraged by their present learned Sovereign, should, as is anticipated, prolong the survey to the North Cape. In that event, the whole arc measured across Europe will amount to the astonishing length of  $25^{\circ} 50'$ . These triangulations of the main land of Russia have further determined the altitude of many portions of the land hitherto imperfectly known by barometrical observations; and of these the published results of M. Struve, concerning Livonia and Hochland, afford an excellent example. In fact, his map of Livonia is, in composition and character, an exact counterpart of the map of Ireland, to which I have elsewhere alluded, on which the relative heights of the various masses of land are indicated by separate colours. I may also add that, by a letter which I have recently received from M. Struve, I learn that in his southward triangulations of the governments of Courland, Vilna, Vitepsk, Volhynia, and Podolia, General Tenner has accurately determined 168 elevations above the Baltic Sea, which thus form the base of a great map which is to be constructed. A remarkable result of this survey, as M. Struve informs me, is, that throughout the whole extent from the Gulf of Finland to the Dniester, or over more than  $12^{\circ}$  of latitude, the greatest altitudes are everywhere very nearly the same, or about 1000 English feet; whilst one single station only, near Kremenetz in Podolia, has an elevation of 1328 feet, that being the culminating point, as at present known, between the Gulf of Finland and the Black Sea. Hitherto the Valdai Hills have been considered the highest ground in the interior of European Russia, and the barometrical observations of Helmersen and others have never carried them farther than from 1056 to 1100 feet. Rising on their southern slopes, at a height of less than 800 feet, the mighty Volga follows its slow and devious course of 2500 miles before it reaches the Caspian. Hence it is, that the determination of this new point of altitude near Kremenetz, on a far more southern parallel, and from whence the rivers Dniester and Dnieper flow

to the Black Sea, and the Bug and Vistula to the Baltic, is of great geographical importance in a country of such monotonous outline, whilst to a geologist it is specially interesting, as being the culminating point of the southern granitic steppe, which is parallel to the elevated ranges of the Crimea, the Caucasus, and the Carpathians.

Whilst I thus speak of Russian operations, purely geographical, I must not omit to allude, though but for a moment (for, if strictly speaking they come more within the scope of the astronomer, they constitute, after all, one of the corner-stones of physical geography), to the chronometrical expeditions, which Russia has sent forth to determine, with the greatest precision, the longitude of the imperial observatory of Pulkova, around which point the great geographical operations of the empire are to be grouped, and which, in bringing M. Struve and his able associates to our shores last summer, completed this laborious enterprise. Referring to the clear and excellent report of M. Fuss, the perpetual secretary of the Imperial Academy of Sciences, for a well-condensed though more detailed sketch of these operations than I can pretend to offer, and the manner in which the comparisons between Pulkova, Altona, and Greenwich were carried on by numerous instruments, the property of Russia, and by Russian astronomers, at the three places, I will briefly advert to two points. The first is, that as Englishmen we may rejoice, that after very rigorous trials and long comparisons, one of our ablest mechanicians, Mr. Dent, has triumphantly borne away the palm for the superiority of chronometers, which have obtained for him his Imperial Majesty's warm approbation, and a splendid gold medal. The other is, that the final result of this very elaborate and admirably conducted operation has been, that the old meridian of the observatory of Pulkova, as assumed in former trigonometrical surveys of several governments, is found to be in error nearly half a Russian verst in linear dimensions.

We must therefore cheerfully join with the Russians in saying, that never was a longitude between two distant observatories more exactly determined, thanks to the bounty and countenance of the Emperor Nicholas, who, whatever other calls may be made upon his treasury, is always foremost in supporting science by munificent and well-timed grants.

*Modern Changes of the Surface in S. Russia.*—In connexion with Southern Russia, and the probable changes of its surface, since the earliest historical records, we have been favoured with certain researches of Professor H. Malden, occasioned by his elaborate comparisons of the descriptions of the tracts E. and W. of the N. of the Dnieper, as given by Herodotus, with the present features of that country. Whether indeed the Dnieper, as the father of history would lead us to believe,

had another great mouth, which has been desiccated by the formation of a delta, occupying a large portion of a low sandy tract between the main land and the Crimea, and which eventually ponded back the waters, and threw them into the present stream, or whether the operation was aided by a rise of the land, connected with or parallel to the great lines of ancient disturbance in the Crimea and Caucasus, which bring us down to the mud volcanoes of our days, are points which it would require an assiduous personal examination to determine; though in the mean time we may be reminded, that our illustrious countryman, Rennell, was inclined to believe in the former existence of two mouths of the Dnieper.

The great changes which may be effected in the course of rivers, even by the labours of man, have indeed been strikingly illustrated by M. N. Khanikoff. For a long time most geographers viewed as little better than a fable, the tradition or opinion derived both from the features of the country, the details of the historians of Alexander the Great, or the recital of the old English traveller, Jenkinson, that the main stream of the Oxus, instead of flowing, as it now does, into the Aral, passed westwards along the low steppes, and to the S. of the plateau of the Ust-Urt into the Caspian Sea. Humboldt has the merit of bringing out in all its force the high probability of such having been anciently the case; and the observations of M. Khanikoff, as recorded in our Journal, have, I think, greatly strengthened his inference. We are also now positively assured by indisputable evidence that the river Tangh-Daria, the Orontes of antiquity, which thirty-five years ago flowed into the sea of Aral to the S. of the Jaxartes, was turned northward and deflected into the latter stream by the mere manual labour of the Khohandians, who, fearing that their well-watered and consequently fertile tract might become a prey to their warlike predatory neighbours, the Khivans, constructed a dam, and turned their river northwards to the Jaxartes, thus rendering barren and unproductive a rich country contiguous to the Khivan frontier.

*Ust-Urt—Aral and Caspian Seas, &c.*—Colonel Helmersen has recently published a memoir on the steppes, that separate the Caspian from the Sea of Aral, which, whilst it is of great geological importance, is specially attractive to those who, like myself, take a lively interest in those questions of ancient geography, which the Baron Humboldt has opened out to us. Carefully examining the fossil shells brought to St. Petersburg by M. Basinier, an adventurous botanist, who has recently explored the country between Orenburg and the Aral, and the western coasts of that sea to the mouth of the Oxus and Khivah, Colonel

Helmersen tells us that the larger portion of that great plateau, called the Ust-Urt, which separates the Aral from the Caspian, is composed of a limestone of the miocene, or middle tertiary age, its lower flanks only being composed of those peculiar and brackish deposits, which my companions and myself have designated Aralo-Caspian.

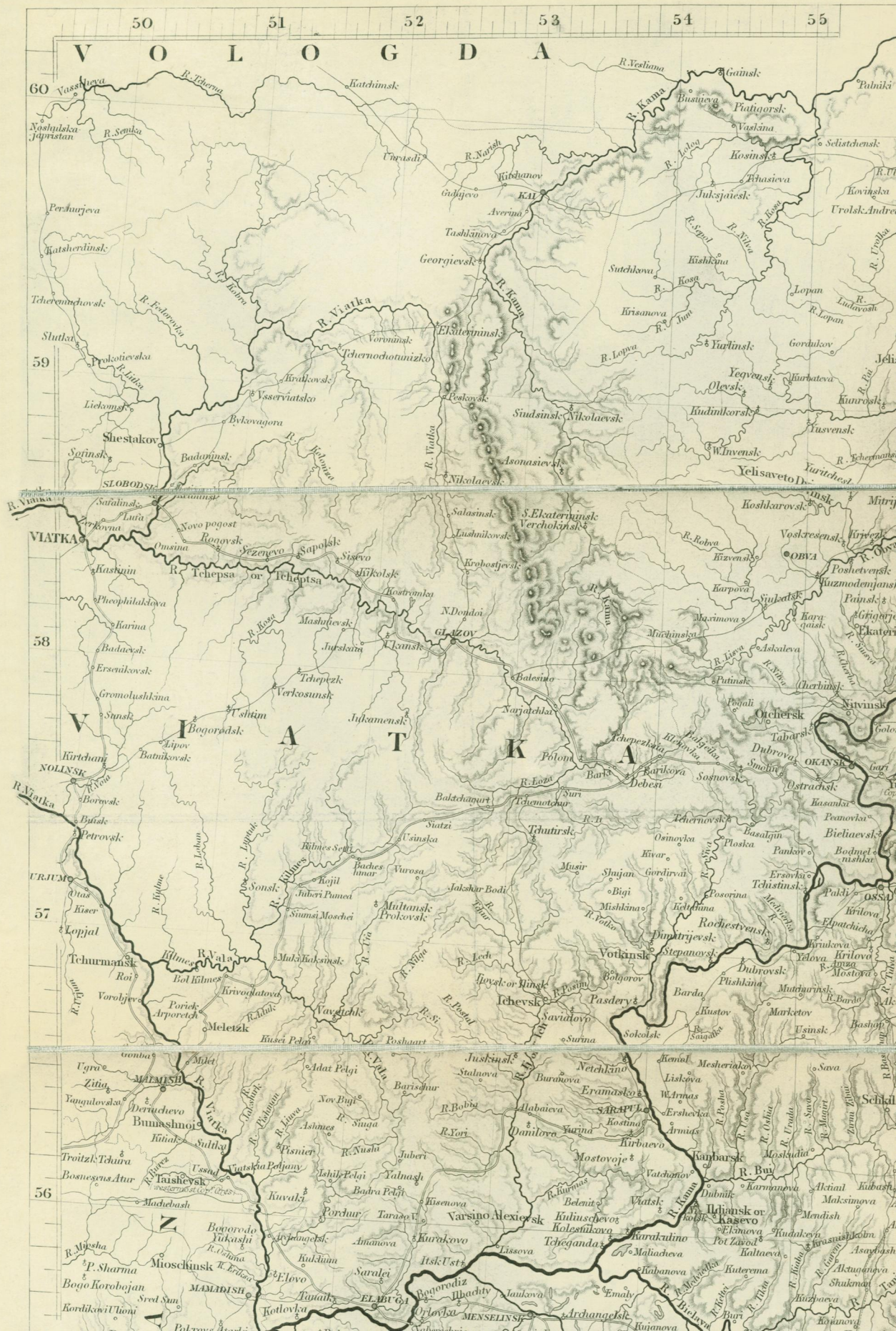
Judging from the scanty documents previously in our possession, I had been led to believe that the whole of this intervening tract might belong to the deposits of that vast inland brackish sea, whose peculiar remains are preserved in those steppe limestones, which occupy such large tracts around the edges of the Black Sea, the Sea of Azof, the Caspian, and the Aral; but the collections of M. Basinier, and the judicious comments of Colonel Helmersen, seem clearly to prove that, previous to the existence of the great inland brackish sea, the bottom of the more ancient ocean had been raised up in a great promontory, to form the plateau of the Ust-Urt, on the edges of which only the Caspian or brackish water deposits are found adherent.

The latter constitute, in fact, low cliffs not exceeding 200 feet in height, whilst the miocene and oceanic strata rise into the higher lands from 500 to upwards of 700 feet above the waters. Geological evidence thus supports the conclusion, which Baron Humboldt had arrived at by copious study of ancient geography; and it sustains also his views of the continuation of a great meridian line of elevation coincident with one of the last elevations of the Ural chain. The further discovery of a ridge of eruptive rocks on the right bank of the Oxus to the N. of Khiva, as proved by the specimens brought back by M. Basinier, still further supports this view, and leads us to believe that whilst the Ust-Urt may be a parallel swelling out of the land, a line of fissure also extended from the Mugodjar or southern extremity of the Ural, properly so called, to this Khivan ridge, which is exactly of similar igneous composition.

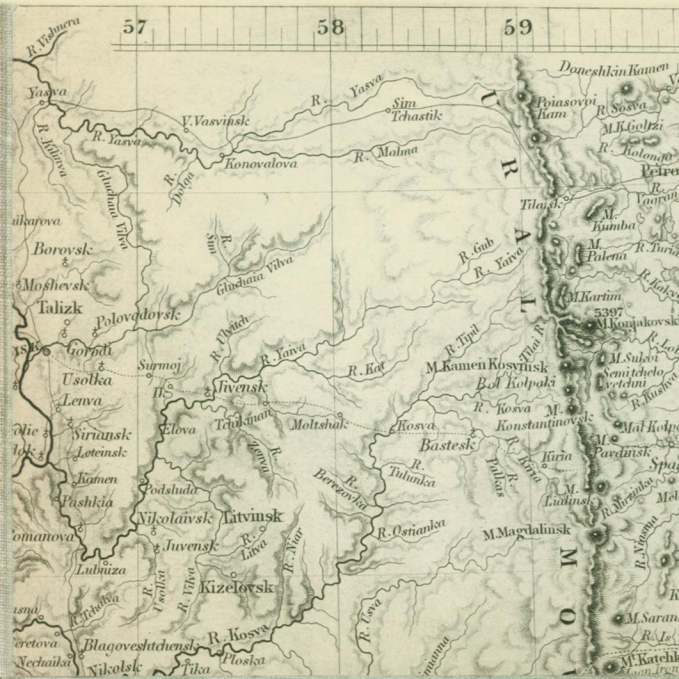
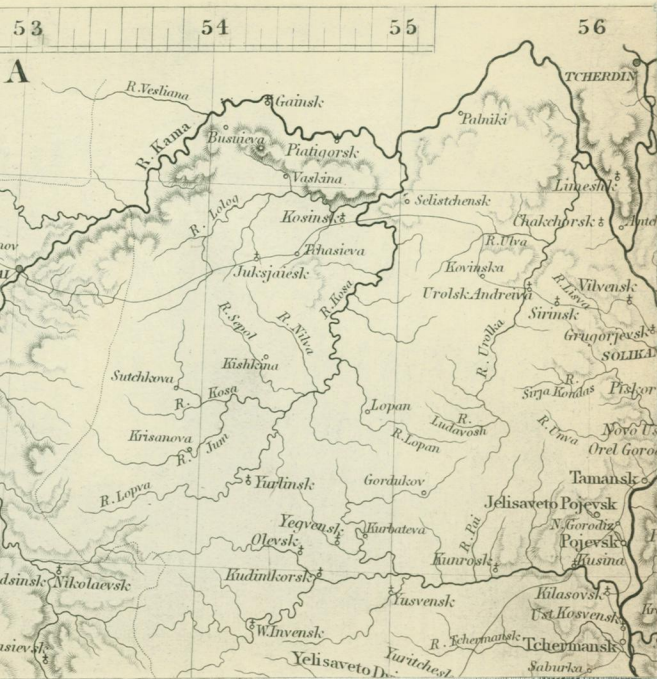
In the mean time we may infer, that for ages after the Ust-Urt was raised up, to form an extensive barrier between the Ural and the Caspian, those seas must still have communicated by the lower southern steppes, and that even after those changes of land and water, which produced the present configuration, had been brought about, the Oxus may during a considerable portion of the historic period have flowed into the Caspian.

*New Maps of the Region S. of the Ural Mountains.*—On the subject to which I have just adverted, as well as in reference to the whole region S. of the Ural Mountains, I must refer you to the forthcoming work on Russia, which I hoped to have laid on your table this day, but

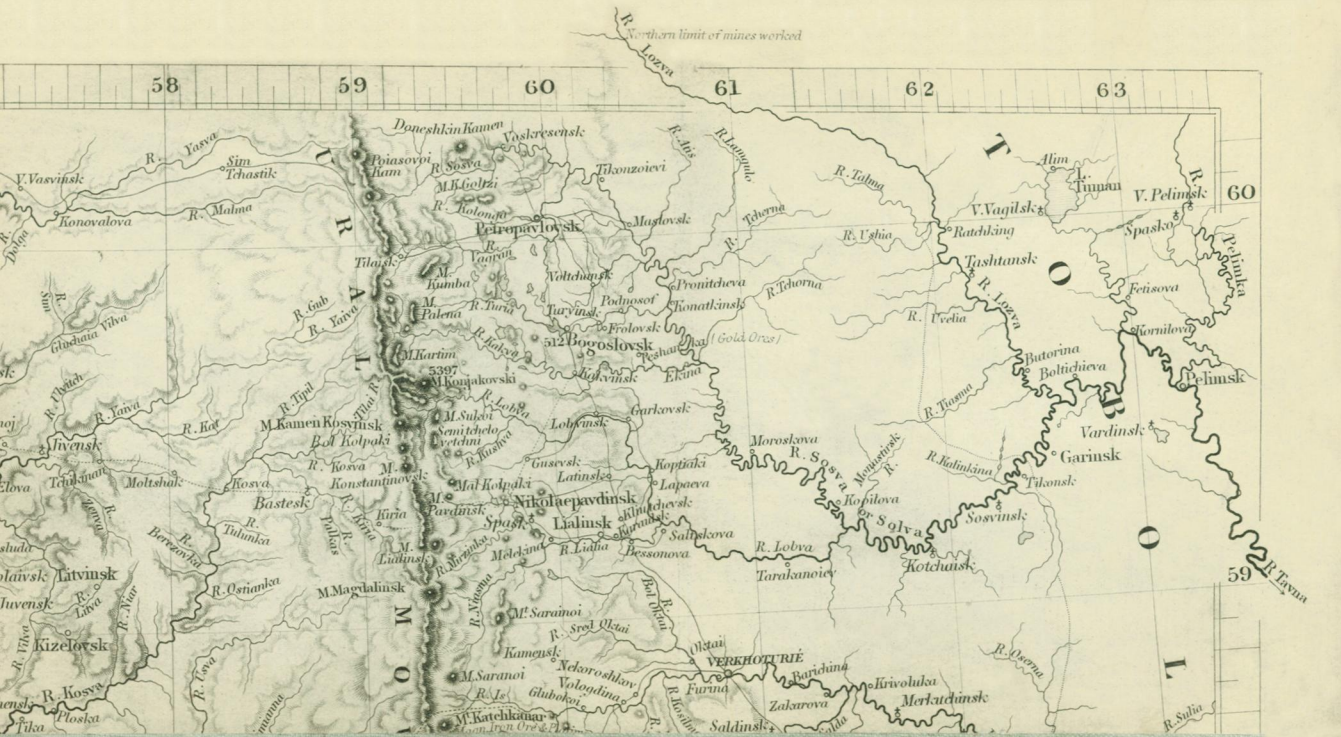












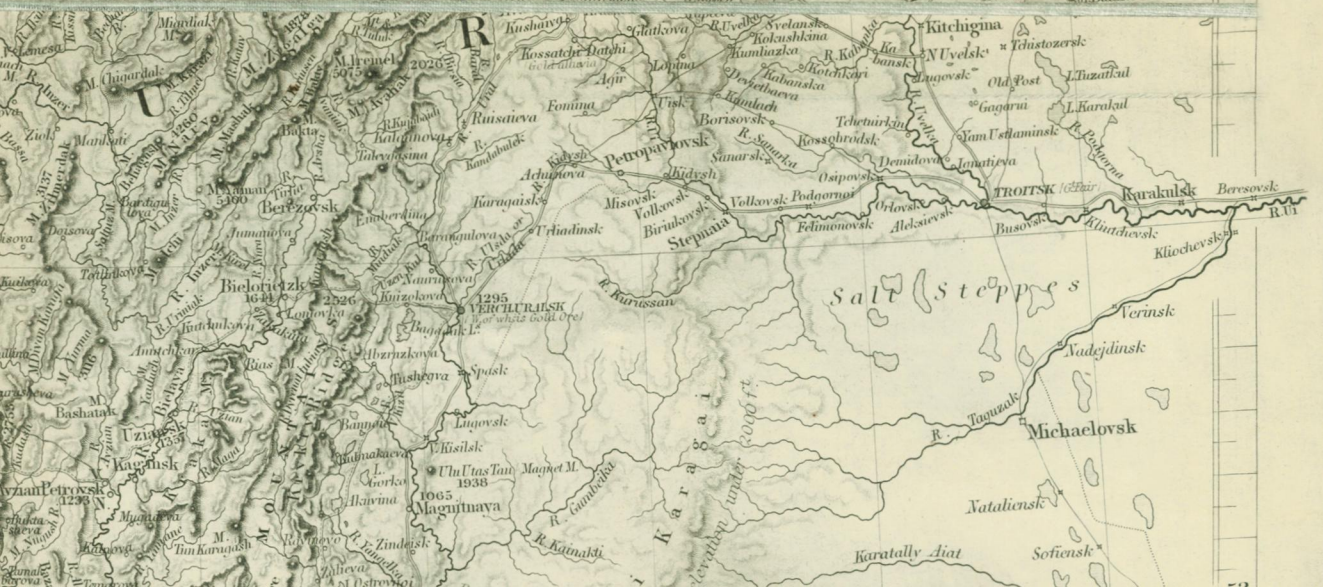




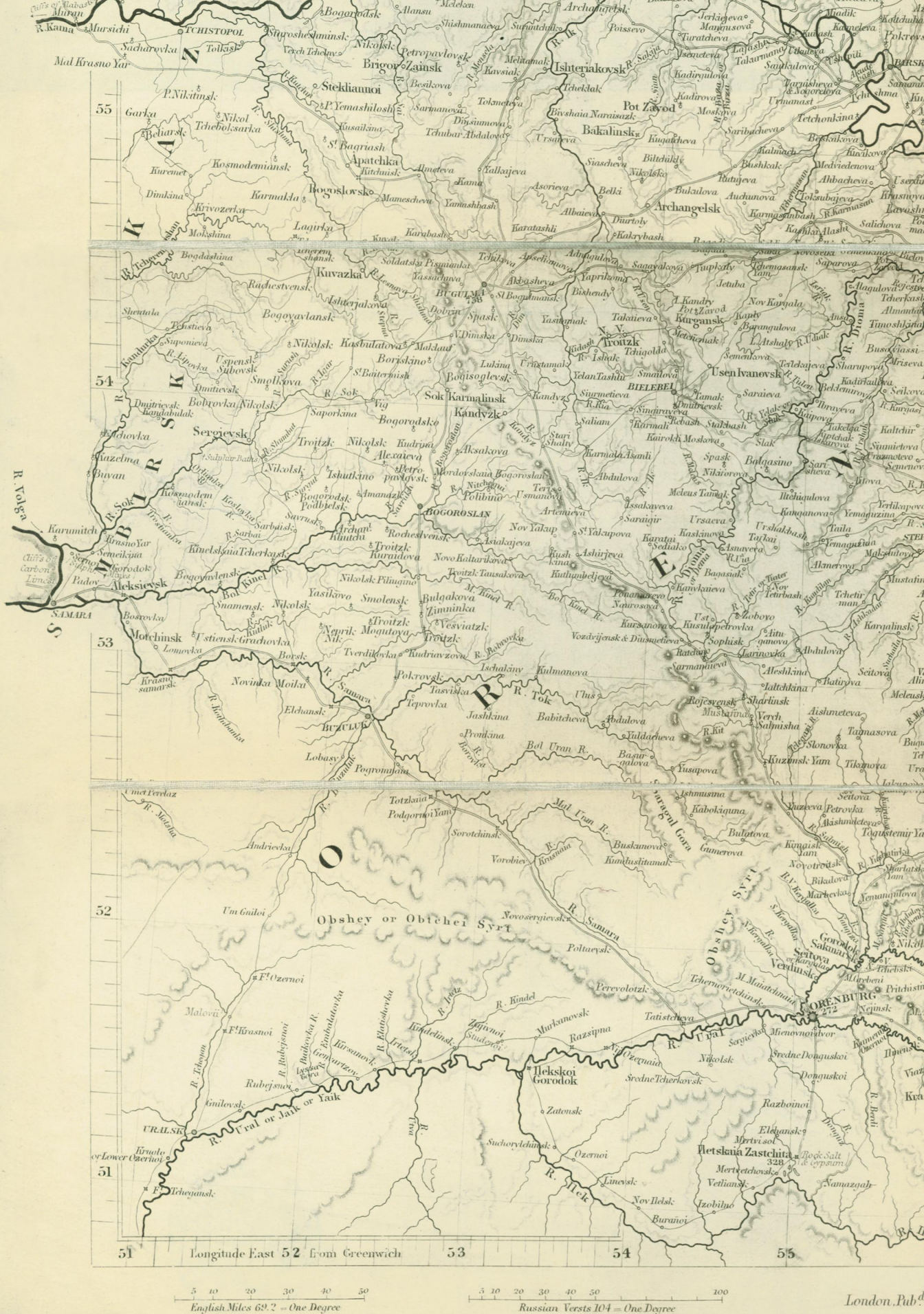




















# The URALIAN MOUNTAINS

( from 51° to 60° N. Lat. )

Compiled from

Various Russian M.S. Maps,

as well as those of Humboldt, Helmersen, &c.

By

Roderick I. Murchison VPRS

Pres. Roy. Geog. Soc. — Corr. Mem. Inst. Fr.

and

John Arrowsmith

F. R. G. S.



which, on account of the complexity of the subject and the quantity of illustrations, is delayed for a week or two. I will now, therefore, only say that the general map which is thereto appended, has been greatly improved by the recent researches of other geographers, as well as those of Basinier and Helmersen. In all our European maps hitherto published, the wild tracts of which I am now speaking have been very inaccurately laid down; and I can with confidence refer you to this new geological map, as defining their geographical features with much greater accuracy, than any which you have previously consulted. When at St. Petersburg during the last summer, I obtained from the Imperial staff corps some good additional data concerning the northern shores of the Aral Sea, and the lands extending towards Mount Airuk. More recently, indeed, I have received a new Russian map of all the territory between the river Ural on the W. and the Irghis and Tobol on the E., executed by M. N. Khanikoff. From these sources, as well as from a most elaborate Russian map of the S. Uralian mountains, completed by M. J. Khanikoff since the publication of the map, which is already in your volumes, I have been enabled, with the assistance of Mr. Arrowsmith, to improve both the general map, and also that of the Ural mountains, which accompany the works alluded to.

The positive contributions to physical geography embodied in these maps of the two brothers Khanikoff, are indeed of too great value to be passed over, without some words of comment and explanation. The map of the Southern Ural and adjacent countries by M. J. Khanikoff, which is not yet published, but of which he has sent me a tracing, embraces a much more considerable tract than that beautiful unpublished delineation, now deposited in your archives, prepared for me by order of General Perovski, and from which I derived the chief new materials in the construction of the recently published map of the Ural mountains. When given to the Russian public it will be accompanied by an elaborate description of the whole region connected with the S. Ural. The map by M. Nicholas Khanikoff of the great region of the Kirghis steppes to the S. of the government of Orenburg, which is also not yet published, embraces the space between the 55° and 44° lat., and the 63° and 85° long. of Ferro. This tract forms part of the territory sketched out by M. Levchine in 1832. That map was founded on the old survey of Muravine in 1792, and on the subsequent researches of Teofilatief in 1815, of Muravief in 1819, of Meyendorf in 1820, of General de Berg in 1822, of Temtchunikoff in 1823, of Butofsky in 1823, of De Berg in 1824, and of Koloskene in 1825. But since that period numerous other researches have been made. In 1832 and

1833 the N.E. coast of the Caspian and the lower portions of the valley of the Ilek were further surveyed, as well as a portion of the valley of the river Ural, and the tract between that river and the Ilek. In 1834 and 1835 the grounds between the Ural and the Tobol were examined, as were in 1836 and 1837 the whole eastern coast of the Caspian Sea, and the tracts between the Lower Volga and the Ural. A reconnaissance was at the same time pushed into the peninsula of Busatchi. In 1838 the north-western shores of the Caspian were surveyed, and the astronomical position of the Fort Constantine, in the valley of the Tobol, on the river Karagaili Ayat, was determined.

In 1839 the tract whence the rivers Ilek and Emba take their rise, and the western slopes of the Mugodjar Hills (the southern prolongation of the Ural mountains), were explored, and the astronomical positions of the forts of Emba and Tchushkakul were fixed.

In 1840 reconnaissances were extended to the tracts between the rivers Emba, Aktikene, Tcheterli, the gulf of Karatamak on the Aral, the western limits of the great sands of Bursuk, the source of the Mani, and into the valleys of the Khobda, Ouil, Saghis and Djanguilava.

In 1841 other reconnaissances were carried into the valleys of the rivers Ore, Kamisha, Kli, Kumeh, Ighis, Taldik, Ulkha-yuk, and Turgay, and also into the environs of Aksakel-Barli, into the sands Kara-Kuni along the north-eastern shores of the Aral Sea on the right bank of the S.r (Daria) or Jaxartes, from its mouth to the fertile territory of the Khohandians. At the same time, routes were surveyed from the Jaxartes to Khivah by the lake Denkhase, by three different lines over the Ust-Urt from Khivah to Fort Alexander on the Caspian, and to Saraitcheh, on the W. coast of the Aral.

In 1842 the south-western coasts of the sea of Aral, and the mouths of the Oxus, were still further examined; and, besides all this, I may add, that between the years 1830 and 1840, the whole region, embracing the sources of the Turgai, the Ula-tau mountains and lake Denghis, the sources of the Jarissa, the northern shores of the lake Balkash, and that curious N. and S. ridge, the Tarbagatai, which, parallel to the Ural, traverses the Altai mountains as well as the banks of the Upper Irtysh, has been surveyed. The results of these various and indefatigable labours of Russian explorers, with the greater number of whose names I am still unacquainted, have never been grouped together, and the copy of the forthcoming map of M. N. Khanikoff (an author already well known to us by his instructive work on Khiva, and his correction of the erroneous idea concerning the Tanghi Daria), has for the first time made them known. The main features, to which I

have now cursorily alluded, will all appear in the forthcoming geological map of Russia in Europe, and its adjacent countries.

Great as the additions are which the map of M. Khanikoff contributes, he modestly acquaints me that it does not rigorously express the full extent of our present knowledge concerning the steppes of the Kirghis; since ulterior researches in 1843 and 1844 have shed new light on the upper valleys of the Ilek, the Tobol, and the Utsa, as well as on the southern shores of the lake Balkash.

*Explorations of Dr. Schrenk.*—The extreme limits of the wild and remote region, to which allusion has just been made, and tracts far beyond it, have been successfully explored by an able and enterprising botanist, Dr. Schrenk, who has recently returned to St. Petersburg. Remote and unfriended, this ardent naturalist has passed four years in a country, the greater part of which was never before trodden by an European foot. In addition to copious materials with which he will soon enrich botany, geology, and other branches of science, he has made most important observations on the eastern extension of the mass of land, which forms a portion of that vast depressed area so vividly brought before our consideration by Humboldt, and which is now found to extend eastward from the shores of the Aral to the Saissar and Balkash lakes; though in approaching the latter region the ground rises to a few hundred feet above the sea. Thence penetrating to the lake of Issikul, surrounded by lofty mountains considerably south of the range of the Altai chain, and obtaining from one of them a view of the Thian-Chan, whose height he estimates from 16,000 to 17,000 feet, nearly one-half being covered with eternal snows, Dr. Schrenk won for himself the proud title of being the first European who had pushed his researches to the northern foot of the "celestial mountains" of the Chinese empire. It is, indeed, quite clear from what I already know of them, that Dr. Schrenk's researches must materially change all earlier maps. For, though the lake Balkash is laid down, the Issikul does not appear, at least not by that name. Again, the sources of the Tchu river, and its course into the Telekul lake, and the occasional communication between that lake and the Jaxartes (Sir Daria); the true course of the latter stream is the country watered by the upper streams of the Sara Su-a-Ishein, where alone the beautiful mineral "diopase" is found. The definition of various mountain ridges (Ku, Kysil Orai, Tchan-tau, and Aura Kai) are all, I apprehend, new to geographers.

*Middendorff's Siberian Travels.*—At the last anniversary I endeavoured to convey to you some idea of the enterprising efforts of M. Middendorff in the northernmost extremity of Siberia; but as I then

dwelt almost exclusively on the courage, with which he braved every privation amid the dreariest wilds, I must now advert to some of the great results of his expedition. In the first place, he has carried out the wishes of the Academy of Sciences of St. Petersburg, to ascertain the real state of the question concerning the frozen subsoil of Siberia. By placing thermometers at various depths in the shaft at Yakutsk (to which your attention was formerly directed), he has found that at its bottom, or at 382 feet below the surface, the cold is really— $2^{\circ} 4''$  Reaumur, and that it is probable the frozen subsoil reaches to the great depth of about 600 feet! Notwithstanding this extraordinary phenomenon, the lateral extent of which has still to be determined, it appears that the culture of rye succeeds perfectly under favourable local conditions in those regions; for M. Middendorff assures us that at Amguinsk, near Yakutsk, the crops of that grain are more abundant than in Livonia! Whether the intensity of the frozen subsoil (carboniferous and palæozoic rocks) in the region around Yakutsk be due to the vast mass of land by which that locality is surrounded, according to the isothermal views of Humboldt, or on whatever cause dependent, we now know through the labours of M. Middendorff, that at Turukhansk, on the Yenisei, in  $66^{\circ}$  N. lat., and therefore  $6^{\circ}$  N. of Yakutsk, the temperature of the earth seldom descends below zero of Reaumur, and is therefore infinitely warmer than the more southern tract on the Lena. Before, however, we can ascertain to what cause this great difference is attributable, the exact nature of the subsoil in the two tracts must be indicated, and experiments must be instituted concerning *the conducting powers of different rocks*. For if the strata around Yakutsk be (as I have stated) of the carboniferous age, and those near Turukhansk should be tertiary, we may well conceive why the one should be very differently affected to the other. In respect to the northernmost of his explorations, M. Middendorff has thrown quite a new light on the boreal range of vegetation; since, besides the discovery of curious new animals, he has ascertained that whilst rye, turnips, beet-root, and potatoes (the latter however scarcely larger than nuts) grow on the Yenisei to lat.  $61^{\circ} 40'$ ; indigenous plants, requiring less warmth, flourish much farther north, and that even trees with vertical stems reach to *about*  $72^{\circ}$  N. lat. in that parallel of longitude! This great extension of our previous knowledge on the subject of the limit of vegetation, proves that geographers can no longer mark it by a rectilinear zone, but must accommodate such line to climatological and local conditions; in some tracts running it southwards to about  $66^{\circ}$ , and in others extending it northwards to  $72^{\circ}$ . The actual

extension of the line of forests to N. lat.  $72^{\circ}$ , in the very central parallels of longitude of Siberia (Taimyr), has also a very curious bearing on the interpretations of geologists and palæontologists. Modern geologists, including Humboldt and Lyell, have for some time maintained that, judging from his integument and hairy covering, the mammoth must have been a denizen of the lands, where not only his bones but even his carcase and hide have been found in Northern Siberia; an opinion in which, after personal examination of the edges of the great region of their sepulture, I fully agree, and for which I have elsewhere assigned various other reasons. It was, however, reserved for our great British comparative anatomist, Professor Owen, to show by a close examination of their teeth, that those great quadrupeds were specially organized to live on the branches and leaves of such shrubs and trees as grow in boreal latitudes. Combining this discovery with the evidences of their thick and woolly-clad skin (as formerly insisted on) there is no longer occasion to invoke a supernatural and sudden refrigeration of Siberia, which transferred it from a climate suited to elephants into one of such intense cold that they were thereby suddenly destroyed. M. Middendorff, in short, has ascertained, that in lat.  $72^{\circ}$  there are still trees which, according to Professor Owen, would suffice for the sustenance of mammoths; and these forests, I may remark, lie very little to the S. of the tracts in which the *greatest* quantities of the fossil bones of those creatures have been discovered.\*

But to return to M. Middendorff and his last researches. Undaunted by the severe privations he had undergone in obtaining his knowledge of the far northern lands of Siberia, he next undertook the not less arduous task of traversing the whole of that vast continent to the Shantar isles, at its south-eastern extremity, and thence to return to Nertchinsk along the Chinese frontier. His journey from Yakutsk to Udscoi, on the coast of the sea of Okhotsk, across the Yablouner, or Stanovoi mountains, through thickly wooded rocks, deep morasses, and over swollen rivers, was so successfully accomplished, that the stores he has brought back to St. Petersburg (or which will follow him when more are added to them by his intrepid and faithful companion, Branth, who is still in those regions) will fully lay open the Fauna and Flora of a region never previously explored by a man of science.

Floating down to the sea of Okhotsk from Udscoi, in frail canoes, M. Middendorff and his friends, braving shoals of floating ice and perpetual rains, reached Nikta in the great Shantar island. The wild regions

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\* See Owen on British Fossil Mammalia—(Elephants).

which were traversed (and which in many parts can only be threaded by *following the tracks formed by bears beneath the dense matting of underwood and birch trees*) seem to consist for the most part of carboniferous and other palæozoic deposits, which in the ridges, such as the Stanovoi, and again near the coasts, are broken up, dislocated, and metamorphosed through the intrusion of granites, greenstones, and other rocks of igneous origin. These far south-eastern tracts of Siberia (and Yakutsk is similar) seem to contain precisely the same ancient sedimentary strata, as those which form the flanks of the Ural mountains, or western boundary of this vast country, and, like them, to have been similarly deranged at intervals by various plutonic eruptions.\*

But apart from the botany, zoology, and geology of the northern and south-eastern extremities of Siberia, much positive geography has been derived from the researches of M. Middendorff and his companion Branth. The Shantar islands, which rise abruptly from the sea, are now made known to us, not only as consisting of quartz rock, granite, &c., but its headlands are shown to be steep cliffs, which extend into the sea in the form of reefs. The currents are powerful and remarkable; vast masses of floating ice encumber the sea during the short summer, even in that comparatively southern parallel of 55° (that of our Newcastle-upon-Tyne); during five weeks the travellers had only eight days without rain; so much does climate depend on local terrestrial conditions. Lastly, in his return journey, M. Middendorff took upon himself (for the thought was entirely his own) to examine the frontier line of China between the sea of Okhotsk and the little river Gorlitz, the western territory of the Amúr, where that great stream, quitting the Russian territory, flows southward and eastwards into China; a tract never explored even by a Cossack. In the ancient treaty of 1689, concluded at Nertchinsk between Russia and China, when the former country ceded the region of the Amúr, of which it had had previous possession, it was simply arranged that frontier marks should be established along the mountain chain, which there extends from the Gorlitz on the W. to the sea of Okhotsk. Russia, however, it appears, never erected these signs, but simply left the boundary question to nature and ancient custom. In ignorance, therefore, of the facts now for the first time ascertained by M. Middendorff, all geographers have made the Chinese frontier pass along the northern slopes of the chain in question. The fact, however, is otherwise; for the precise Chinese have, on their part, erected a line of marks,

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\* See Russia in Europe and the Ural Mountains, part ii. vol. i.

which M. Middendorff visited (in the last winter, and during a cold which froze mercury), accompanied by some Tongusians and an interpreter; and here he found those barriers invariably on the S. side of the mountains; the Chinese having left all the hilly region of rein-deer, and animals valuable for their skins, to their neighbours, whilst they content themselves with the fertile plains. In truth, the inhabitants of the mountains have regularly paid their fur tribute to Russia, since the first occupation of Siberia. M. Middendorff further ascertained that, between Udskoi of the Russians and the mouth of the Amúr, there is a considerable tract, quite independent both of Russia and China, and occupied by a people called Guilaïques, who pay no tribute to either Emperor; and in that country no boundary marks exist.

Englishmen, who are behind no nation in their love of daring adventure, will doubtless rejoice to learn, that just in the same way as they have often welcomed their own distant explorers, and as doubtless they will receive Franklin and his brave shipmates, when they return to our shores, so did a public feeling, amounting to enthusiasm, prevail at St. Petersburg when the young and intrepid Professor of the University of Kief reached that metropolis, and was rewarded by a general banquet of his countrymen, and the warm commendation of his illustrious Emperor. The Middendorff fête (the first of that sort ever given in Russia), I may also tell you, has further had the good effect of suggesting the formation of a Geographical Society at St. Petersburg, which will, I trust, be constructed on much the same plan as our own.

#### MISCELLANEA.

*Colouring of Maps.*—Colour has long been considered a powerful auxiliary to mere engraving in maps of every kind; indeed, for certain special purposes, as in geological maps, it is indispensable. Any other mode of colouring such maps than by hand, has always been considered very difficult, for some reasons sufficiently evident of themselves, and others which it would be too long for me to explain in this place. It is therefore with great pleasure we learn that M. Dufrenoy has presented to the Academy of Sciences a ‘Memoir on the Colouring of Maps,’ by which all the defects hitherto inherent on the application of tints, by mechanical means, have been corrected; and the greatest complication of colouring, as in the case of the great Geological Map of France, by himself and M. Elie de Beaumont, is now effected with perfect ease and accuracy, and at a very considerable reduction of cost.

*Measurement of Heights.*—The difficulties attending the transport of mountain barometers, even of those on the best construction, for the

admeasurement of heights, are too well known to all travellers for me to insist upon them in this place. Those instruments almost invariably meet with accidents, and hence recourse has been had to observations on the temperature of boiling water, for ascertaining the height of positions. A paper on the subject, by Colonel Sykes, is printed in the 8th vol. of our Journal; but although this mode has the advantage of easy execution, its indications are never strictly correct, and can only be used as approximations more or less satisfactory. In proof of this I have only to refer you to two papers in the *Comptes Rendus* of the French Academy of Sciences (for April, 1844), entitled 'Observations made on the Fülhorn, in the Alps, on the Temperature of Boiling Water,' by MM. Peltier and Bravais.\* You will there see how many circumstances must be taken into consideration, and how many corrections, calculated with the minutest mathematical accuracy, must be made before the real height of any place can be satisfactorily ascertained by the boiling of water. That great accuracy may be attained is shown by another memoir on the same subject (*C. R.* Jan., p. 163) by Mr V. Regnault, but this accuracy depends upon a degree of perfection in the thermometers that is rarely possible, and can certainly never be expected in the instruments of commerce; besides, the most perfect instruments may be broken, and the traveller is then left to shift as well as he can, with thermometers whose indications are not to be trusted. I do not mean by this to dissuade travellers from employing the boiling-point of water, as a method of ascertaining heights when their barometers are broken, or when they have none; but I would caution them against a too confident reliance on a method, the results of which are likely to be defective from a great variety of causes. On this subject, therefore, I will only add, that modern science could not offer a greater boon to the traveller, than a really portable instrument for the correct admeasurement of heights, an instrument neither fragile nor susceptible of derangement. Of existing mountain barometers, Sir Robert Schomburgk, an authority in these matters, most strongly recommends Bunten's syphon barometer as the best. M. Arago, we understand, has constructed a portable barometer, much less likely to be broken than those now in use.

*Temperature of the Mediterranean.*—M. Aimé has communicated to the Paris Academy of Sciences a memoir on the temperature of the Mediterranean; and has arrived, by his experiments in the neighbour-

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\* M. Izaru has also a paper on the boiling of water in the Pyrenees (p. 169), and MM. Martius and Bravais on Mont Blanc.



hood of Algiers, at the anomalous result, that the temperature of that sea is higher near the coast than further out. This is a subject of no small importance; as from the generally received opinion, that a lowering of the temperature of the sea is indicative of diminished depth, the thermometer had become a valuable addition to former nautical instruments. If however the law of decreasing temperature with decreasing depth be not universal, and if, on the contrary, decreased depth be in some situations a concomitant of increased temperature, the value of thermometric indications becomes doubtful, and reliance on them may even be attended with danger. Independent, however, of observations for temperature made at the surface of the sea, and the relation of this temperature to the depth of water at the place, the temperature of the sea at different depths below the surface is a curious problem of physical geography; it is one which presents apparent anomalies and some uncertainty, from the want of an apparatus that may be relied on as affording a correct indication of the temperature of the lower strata of the water. The indices of Sim's thermometers are liable to be deranged in drawing up the instrument; and although bathometers, and other similar instruments, have been contrived for bringing up water from any depth, they cannot be regarded as furnishing satisfactory results, being liable to have their temperature changed as they pass through strata warmer or colder than the spot from which the water was drawn up. We are therefore glad to learn that M. Aimé has contrived a species of double thermometer, known by the name of *thermomètre à déversement*, for the purpose in question. One of M. Aimé's thermometers is for a temperature higher, and another for a temperature lower, than that presumed at the bottom of the sea: the two are let down together, and from their combined indications, and the ascertained temperature of the surface water, that at the bottom is known. Broken thermometers have been before applied, both for the temperature of the water and that of the land, when that temperature was known to increase downwards, but the application of a similar principle for indicating greater cold appears new.

*Soundings.*—If the temperature of the sea at different depths be a subject of interest, the actual depths themselves are no less so. Various circumstances combine to render it much more difficult to ascertain the depressions of the land below the surface of the sea, than its elevations above that line. The difficulty of obtaining soundings in deep water is well known, for the operation is only practicable during a calm. We must therefore be glad to hear of any successful attempts to sound whilst a vessel is sailing. An instrument, contrived by M. Laignel for this pur-

pose, is on the principle of a kite reversed—that is to say, the lead descends into the water upon the same principle that a kite rises in the air.

*Relief Maps.—Depression of the Dead Sea.*—M. Bauer-Keller continues the production of relief maps, and has lately executed a map of the kind of France and Belgium, on the horizontal scale of  $\frac{1}{2,000,000}$ , and  $\frac{1}{300,000}$  for the vertical heights. A relief globe has also been constructed at Berlin, but we do not know of more than one specimen of it having been as yet imported into this country. There are no names of rivers or places upon it, but the principal towns are designated by red spots. In England, indeed, we may well approve of the successful labours of Messrs. Dobbs, Bailey, and Co., who formerly gave to the public the geological relief map of England and Wales, and also the geographical relief map of Arabia Petræa and Idumæa. They have now brought out a highly finished relief map of Syria and Palestine, the tract of all the known world, which, as it must be the most deeply interesting to every Christian, is at the same time the most singular in its orographical features. In this map the biblical reader will have the most accurate idea of the nature of the tracts inhabited by the Jewish tribes; and, using it with the former map of Arabia, he will have no occasion to consult any other document in studying the Holy Scriptures; whilst the geographer can see at a glance the vast altitude of the mountains of Lebanon (from 9000 to 10,000 feet above the sea), the comparative depression of the sea of Tiberias to 328 feet below it, and the extraordinary depression of the Dead Sea to 1312 below the level of the adjacent Mediterranean.\* This is by far the deepest known fissure in the crust of the earth in reference to the level of the sea, and is the more remarkable, from the Dead Sea having the extraordinary depth of 350 fathoms! Looking to the eruptive character of the rocks which compose the surrounding high mountains of the Holy Land, we may, indeed, regard this phenomenon as a beautiful and striking illustration of the views of De Saussure and other geologists, that great upheavings have naturally been accompanied by deep lateral depressions of the contiguous lands.

*Terrestrial Magnetism—The British Association, and Connexion of different Sciences.*—In bringing to a close these notices on the various steps, by which geography has been recently advanced, and in reverting to subjects connected with our own country, let me say that there is no

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\* It is well to remind geographers and travellers that the extent of this depression, as determined by the trigonometrical survey of Lieutenant Symonds, R.N., and for which one of the gold medals of the Royal Geographical Society was given to that officer in 1843, agrees very nearly with the independent barometrical observations of M. Berthollet and the French savans.

work which British practical science has produced, that ought to occupy a higher place in our estimation, than the great volume recently brought forth by Lieut.-Colonel Sabine, at the cost of the Government, on the magnetical and meteorological observations made during three years at Toronto in Canada. In referring you to the lucid and modest introduction to the tables compiled from the labours of his brother officers of the Royal Artillery, for a full view of the origin, progress, and ulterior objects of the inquiries into terrestrial magnetism in which Colonel Sabine has been so efficient a leader, you must all feel with me that the problems which, in common with Humboldt, Hansteen, and Erman, he is engaged in determining, are of the highest importance to the ultimate aim of physical geography. Valuable, however, as the researches have been, I thoroughly agree with my distinguished friend, that if they be not followed up by further and continued inquiries into the periodical variations of the magnetic direction and forces, as compared with meteorological phenomena also periodical; and also with those secular changes which, with slow but systematic progression, alter the whole aspect of terrestrial magnetism from one century to another, and which, in their nature, are probably intimately connected with the causes of the magnetism of the globe itself, we shall not be enabled to ascend by the inductive process to the establishment of general laws. Ardently, therefore, do I hope that in the same spirit of liberality which has induced our Government to found magnetical observations, and to publish the splendid mass of knowledge already obtained, supported as they are by the voice of science expressed through the Royal Society and the British Association, they will persevere in eliciting further results, and will, in consonance with other European governments, carry out such a series of observations in future years, as may be recommended by the philosophers engaged in this branch of science, who are about to assemble at Cambridge.

I cannot make this allusion to the British Association without inviting geographers not only to repair to the ensuing meeting at Cambridge, but to endeavour there to propound for discussion, in the Subsection of that great national institution, which is specially allotted to them, more suggestions than they have been accustomed to make in former years. Even those geographers who have no such communications to offer, may rest assured that they will reap much instruction from the assembled geologists, zoologists, botanists, and ethnologists. I might indeed simply refer you to the last volume of the Transactions of the British Association, containing the admirable report of Professor Owen on the extinct mammals of Australia, and to the beautiful gene-

realizations with which it is terminated ; and you will instantly see, from evidence offered by his own science, that this great comparative anatomist takes the broadest and soundest views of the connexion between the ancient and modern distribution of masses of land. Showing us that, as a whole, the extinct quadrupeds of our island are closely analogous to those of the continents of Europe and Asia, and that these quarters of the globe are separated by no natural boundaries which could have caused great variation in the distribution of animal life, Professor Owen infers that England must have been a portion of the Continent, when it was tenanted with the same species of now extinct elephants, rhinoceroses, hippopotami, bisons, hyænas, tigers, bears, &c., inhabitants of the common Continent. Even Africa is, on one of its flanks, so slightly divided from the rest of the old world of the geographer, that its existing races of mammals in some sort intermingle ; though certain quadrupeds, as the giraffe and hippopotamus, which have become extinct in Europe and Asia, still exist in Africa. But when we cast our eyes to Australia on the one hand, or to South America on the other, then is the fauna as entirely dissimilar in each, as we should expect to find it in countries partitioned off by such wide seas and great natural barriers. From observing the fact, that the fossil mammalian remains of these two continents are as unlike those of Europe, Asia, and Africa, as their present quadrupeds, Professor Owen rightly concludes “ that the same forms were restricted to the same provinces at a former geological period, as they are at the present day ;” and thus he sustains the views of modern geologists, that in those periods immediately anterior to our own, the great geographical features of the earth must have been the same as those which now prevail.

*Conclusion.*—In concluding this report on the recent progress of geography, I am but too well aware that, as at our last anniversary, I must apologise for the inadequacy of my efforts. Occupied as I have been, up to the very moment at which I address you, in the completion of a large work on the structure of Eastern Europe, and the Ural Mountains, I have only been able to snatch a few hours at intervals to execute my duties as a geographical President ; and without the additional labours of our indefatigable Secretary, this review would have been still more imperfect. If, however, you will pardon me for not bringing before your notice a greater mass of materials, I hope that the picture I have endeavoured to sketch of the progress of our science in those foreign countries with which I am the best acquainted, may, at least, satisfy you that I have the spirit of geography at heart. At all events I trust that you have found in me a person who, zealously devoted to your cause,

has striven, by every means in his power, to augment the number of your members, to attach to your list names of distinguished men, and to render this Society as popular as it is scientific. In my wish to effect these ends, I only claim for myself the merit of endeavouring to increase that *esprit de corps*, which is essential to the success of a scientific Society like our own, solely dependent on the hearty union of individuals. I have therefore a right to feel a pride in seeing men of all shades in public opinion, and of all the walks in letters and science, combining to uphold the efforts of this useful national Association.

In bidding you adieu, Gentlemen, I offer to you my sincere thanks not only for the honour with which you have invested me, but specially for the zeal and unanimity with which you have supported me in carrying out our common objects. In whatever capacity I may hereafter be placed, I shall never cease to take the deepest interest in your welfare; and in resigning this chair to the gallant and noble seaman, whom you have elected as my successor, permit me to congratulate you on having obtained a President who, as he is an ornament to the Peerage and the Royal Navy, will, I feel assured, so zealously discharge his duties, and so steer our exploring vessel, as to obtain the hearty cheers of his crew, and the approbation of all true geographers.

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